ENGINEERING NEWS-RECORD

NOVEMBER 6, 1958 PRICE 50 CENTS

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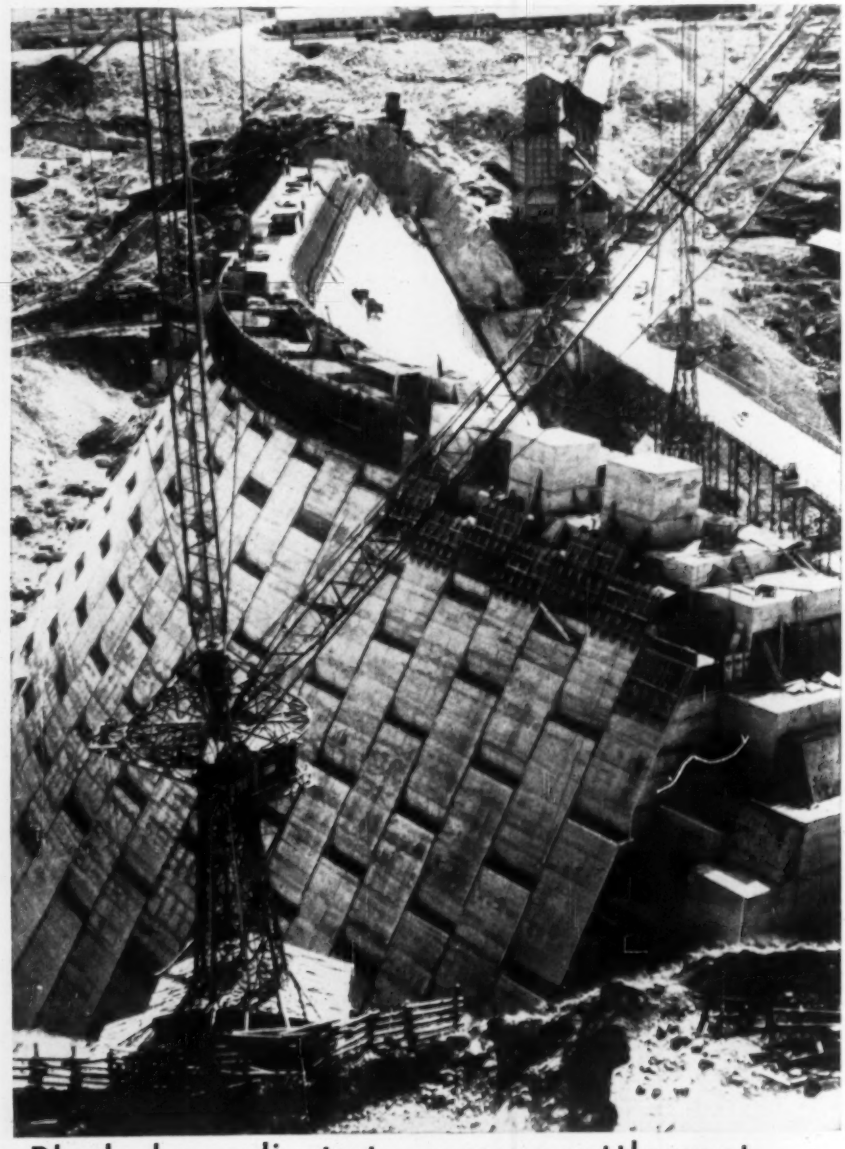

Block dam adjusts to uneven settlement *p. 32*

Construction's Challenge: Modernizing America *p. 62*

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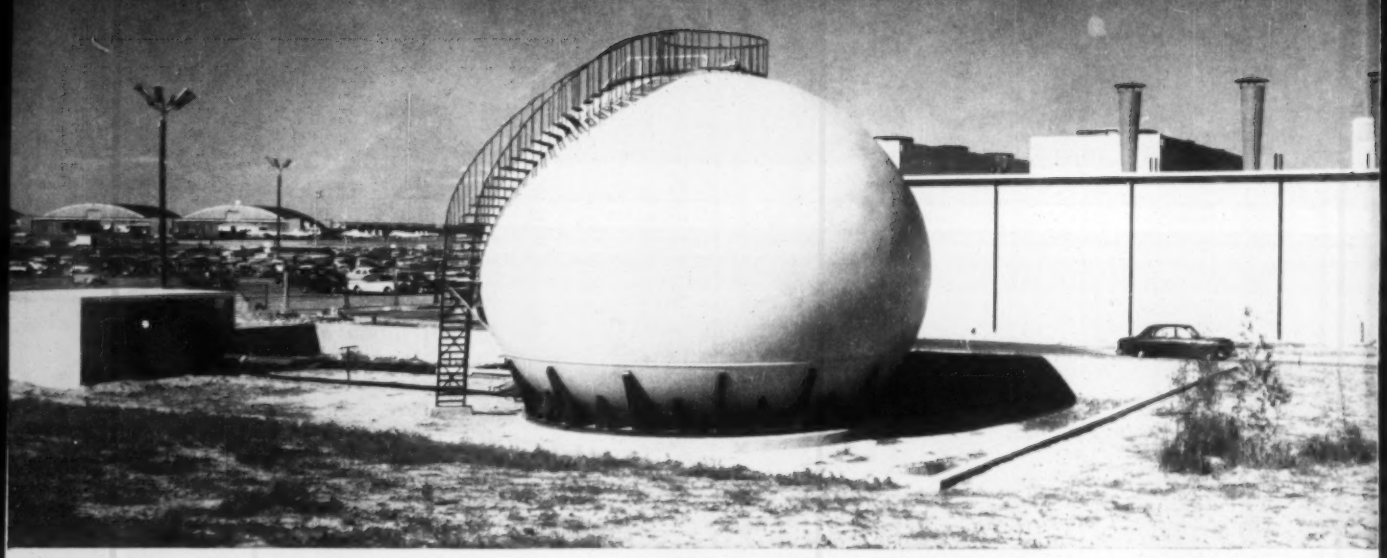

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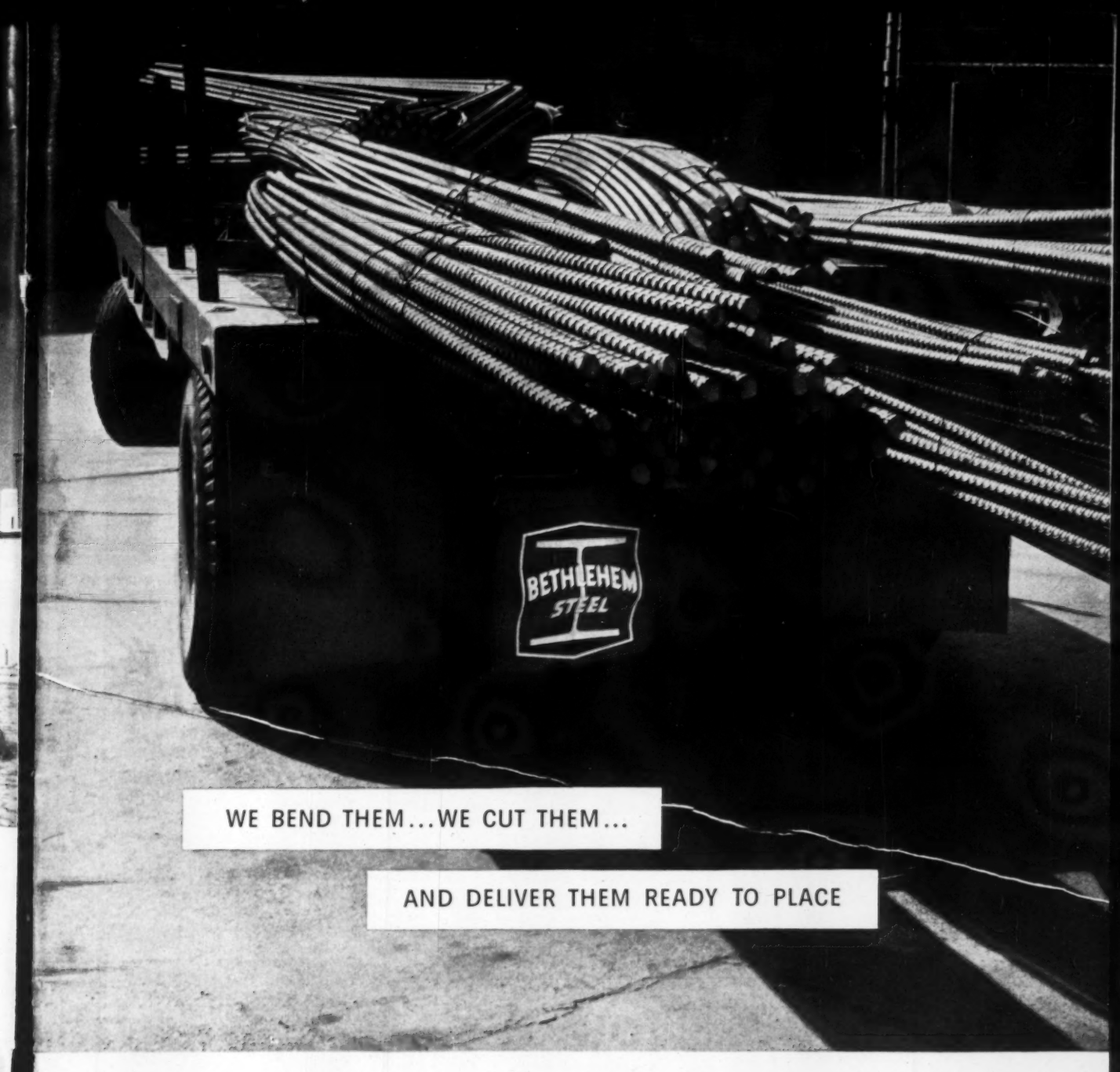

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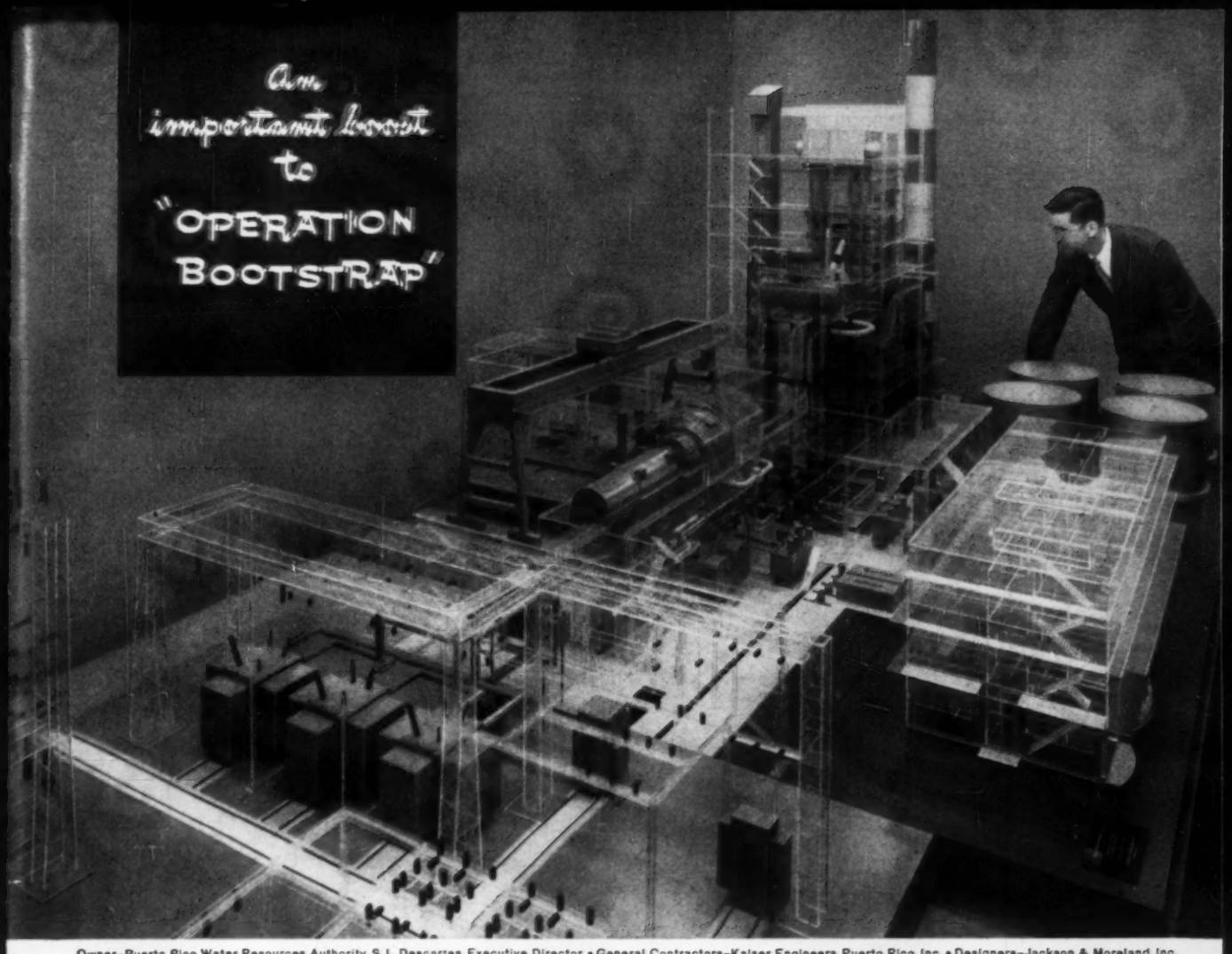

Owner–Puerto Rico Water Resources Authority, S. L. Descartes, Executive Director • General Contractors–Kaiser Engineers, Puerto Rico, Inc. • Designers–Jackson & Moreland, Inc.

Puerto Rico's new PALO SECO POWER PLANT ...another power project of RAYMOND INTERNATIONAL

Low cost electric power plays a vital role in the success of Puerto Rico's exciting industrial development program "Operation Bootstrap." The newest addition to the island's mushrooming electric power system will be the Puerto Rico Water Resources Authority's 200,000 kilowatt Palo Seco Plant, near San Juan.

On this project Raymond, as subcontractor, will drive 2,430 Step-Taper Piles, totaling in excess of 150,000 linear feet for the plant's foundation. In addition, Raymond will construct the superstructure and allied structures, including intake channels and a rock jetty. Palo Seco will be the first "all outdoor" thermal-electric plant in Puerto Rico. This economical design, utilized so successfully in other parts of Latin America, has no walls—only a column-supported roof over equipment requiring protection from the elements.

Raymond is proud of its role, past and present, in helping Puerto Rico's power grow. Already in operation are six Raymond-completed units at the San Juan Steam Electric Plant and two at the South Coast Steam Electric Plant. The combined electric production at these eight units totals 270,000 kilowatts. But power plants are just one of the phases of Raymond's world wide activity. If you are contemplating construction anywhere, anytime, call on us. We'll be glad to show you if and how we can help.

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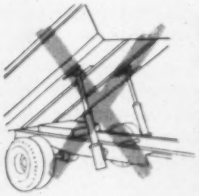
What's the dumping time of your hauling units — 15, 20, 25 seconds? Right there is where you can save time, get more trips an hour by dumping in *one second* with Koehring® 6-yard Dumptor®. It has no slow-acting mechanical hoist. Operator trips the body-release lever, and *gravity* tilts the body 70°. One second later the load is out, and Dumptor is on its way back for the next load.

This adds up to a substantial increase in extra yards hauled per hour. For instance, take a typical 1,000-foot haul where an ordinary dump truck would make 16 trips an hour. Allowing the same time to load, haul and return, Koehring Dumptor would average 17½ trips on the same cycle. That's because one-second dumping cuts 20 seconds off cycle time — gains a total of 320 seconds, or 5.3 minutes more productive time per hour — gives you 17½ trips, instead of 16. This, alone, adds 9% to hourly yardage output with Koehring Dumptor. But that's not all —



No body-hoist maintenance

There are no expensive body-hoist replacement parts, no hoist maintenance or down-time delays, because *gravity-dump* never balks, never wears out. You get the same one-second dumping *every time.* What's more — Dumptor has no springs — just one big snubber type shock absorber on steering axle. Big shock absorbing tires eliminate the need for springs on the drive axle. No springs — *no spring maintenance!*

Add up *your* dump-time, body-hoist and spring-maintenance costs — see for yourself how much you can save by hauling with Koehring heavy-duty Dumptors. Check too, how *no-turn* shuttle-hauling cuts another 15 to 30 seconds off cycle time. Call Koehring distributor about it *today* — or write for new catalog.

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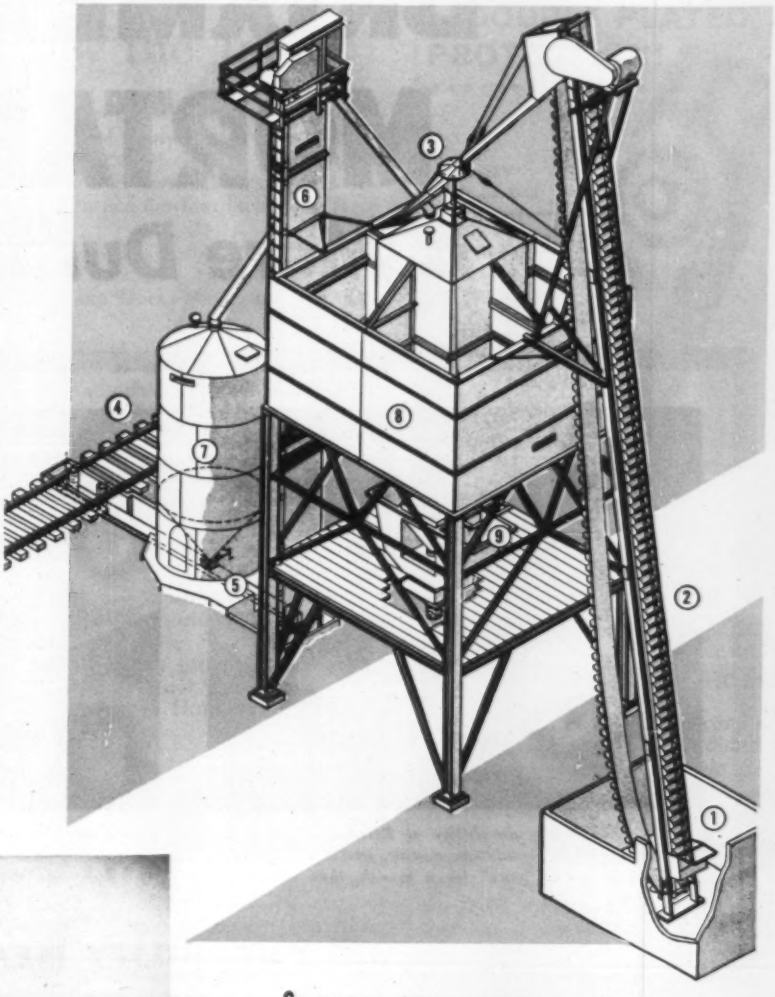
TAKE A QUICK "TOUR" through this Johnson concrete plant:

As you follow the flow of aggregates and cement through this Johnson "one-stop" plant, notice how every operation from receiving of materials to final weigh-out, is carefully coordinated for fast, accurate production:



1 Set up here for truck delivery of aggregates, plant has 5 cu. yd. receiving hopper attached to elevator boot.

2 Open, inclined belt-and-bucket elevator feeds aggregates into overhead chute at rate of 90 tons an hour.

3 Pivoted distributor (manually controlled from ground-level) directs flow of aggregates into proper bin compartment.

4 Canvas shrouds with car-adaptor plates unload bulk cement from hopper-bottom cars at rail siding.

5 Undertrack screw conveyor receives cement from rail cars, or ground storage silo, and transfers it to elevator at rate of 275 bbls. per hour.

6 Vertical, enclosed bucket elevator with 2-way discharge gate directs cement into dual-compartment central tank in bin or to auxiliary ground-storage silo. Gate is cable-controlled from ground. Elevator capacity: 275 bbls. per hour.

7 Cement silo has 470-bbl. capacity. Cement rotary plug valve at cone bottom controls flow of reclaimed cement.

8 Johnson prefabricated square bin has a centrally-located 270-bbl. water-tight cement tank, and can be arranged with 4, 5 or 6 aggregate compartments. Total aggregate capacity is 210 cu. yds.

9 Square type Concentric Multiple batcher weighs cement on a separate scale. It can be arranged for handling 4, 5 or 6 aggregates, plus 1 or 2 types of cement — has total capacity of 3 cu. yds.

Note unique bin assembly, which consists of individual, welded sections laid together like blocks, and bolted together. Bin sections do not exceed 11′ x 11′ x 21′ for ease in handling and shipment. Total capacities: 125 to 300 cu. yds. In addition to transit-mix, this plant readily sets up for central-mix or concrete products — manual or push-button control. Want more facts? See Johnson distributor, or write us for 44-page catalog.

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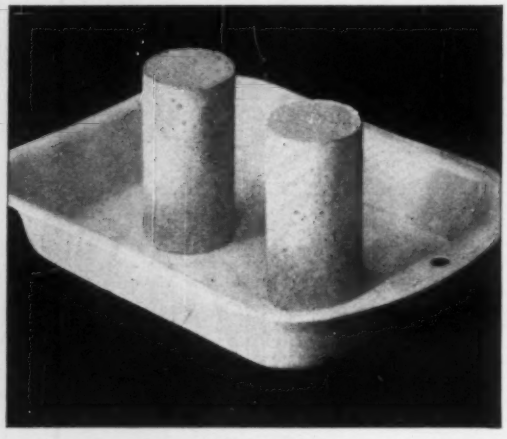
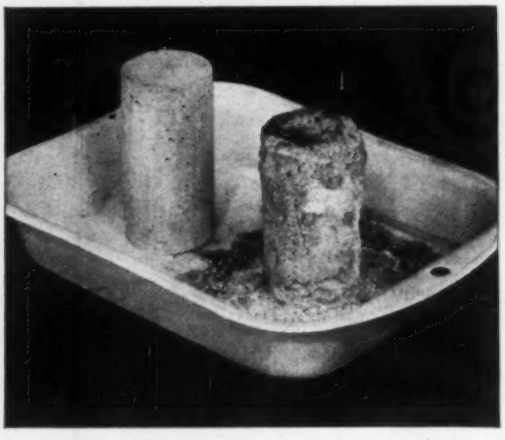


To compare the durability of Brixment mortar and ordinary cement-and-lime mortar, make a cylinder of each, let them "cure" for a month, then freeze and thaw them for forty or fifty times, with a little water in the pan (the freezing unit of your electric refrigerator will do). See the difference with Brixment mortar!



—AND DURABILITY MEANS
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For permanent strength and beauty, mortar must be *durable*—must be able to withstand the alternate freezing and thawing to which it is subjected many times each winter.

Brixment mortar *is more durable.* This greater durability is due partly to the strength and soundness of Brixment mortar, and partly to the fact that an air-entraining water-repelling agent is incorporated into Brixment during manufacture. This helps prevent the mortar from becoming saturated — therefore protects it from the destructive action of freezing and thawing.

Walls built with Brixment mortar therefore *retain* their original strength and appearance — even parapet walls and chimneys, where exposure is particularly severe.

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Let Engineers Review the Jobs

SIR—The article on "Problems of Professional Engineers in Federal Jobs" by R. H. Johnson (ENR Mar. 6, p. 42) hits the nail right on the head. It was well thought out and proposed some practical and workable solutions. I would like to comment especially on the recommendation of having professional engineers review engineer classification.

During my short period with the Corps of Engineers I have heard of civil engineers being reclassified as architects and architects being changed to civil engineers which, to put it mildly, has caused a lot of dissatisfaction. This seems to be due to an antiquated civil service procedure or lack of professional knowledge of the classifier.

During World War II I served in the Navy's Civil Engineer Corps, which organized and supervised the famous Sea Bees. In the formation of the CB battalions it was necessary to procure a capable and competent officer force. This was handled by the various Navy procurement agencies throughout the country. During the early stages of this effort all interviewing and reviewing of qualifications was done by non-engineering officers. Result, many capable engineers and constructors were either turned down or incorrectly classified.

The writer, probably with many others, protested to the Bureau of Yards and Docks about this procedure until the Navy in its wisdom assigned civil engineering officers to the various procurement agencies to interview personally all officer candidates and review their capabilities. These candidates could sit down with someone who spoke their language and could receive help and guidance in handling the red tape of government procedure.

The result of this change was almost astounding and became one of the major factors, in my opinion, in the efficiency and capability of the Sea Bees throughout the various theatres of the war.

If this system proved successful for the Navy, why not with others?

HORACE C. CRANDALL
Reading, Mass.

Is Stirrup Design on the Beam?

SIR—I have noted the comment by P. P. Valerio regarding stirrup design and his request for further opinions on this subject. (ENR May 1, p. 14).

The writer is among those who agree with Mr. Valerio. I have never been able to accept the hypothesis that steel and concrete can work together in tension with the steel stressed to 18,000 psi or 20,000 psi while the stress in the concrete remains within the limits allowable for concrete in tension. If the stress in the concrete exceeds the allowable limit, it must be assumed that the concrete is cracked and can carry no load. This becomes even more apparent when working with ultimate strength design, where at the ultimate load the steel is stressed to the elastic limit.

It is no doubt true when a part of the concrete section is in compression from bending or direct stress, the concrete is able to carry more diagonal tension than if such condition does not exist. It is also true that if in the concrete section there should be any initial tension, such as could be caused by temperature or shrinkage, the capacity of the concrete to carry diagonal tension, due to shear, would be reduced.

The only reason for designing with the assumption that when stirrups are required the concrete can still carry a part of the diagonal tension is to save stirrup steel. However, it has been found that such savings are very small in relation to the total weight of the reinforcement in any given structure and usually amount to much less than the allowable tolerance between the weight of the bars as rolled and the theoretical weights.

C. S. BUMANN
Consulting Engineer
Springfield, Mo.

(Reader Comment continued page 14)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 300 W. 42nd St., New York 36, N. Y.

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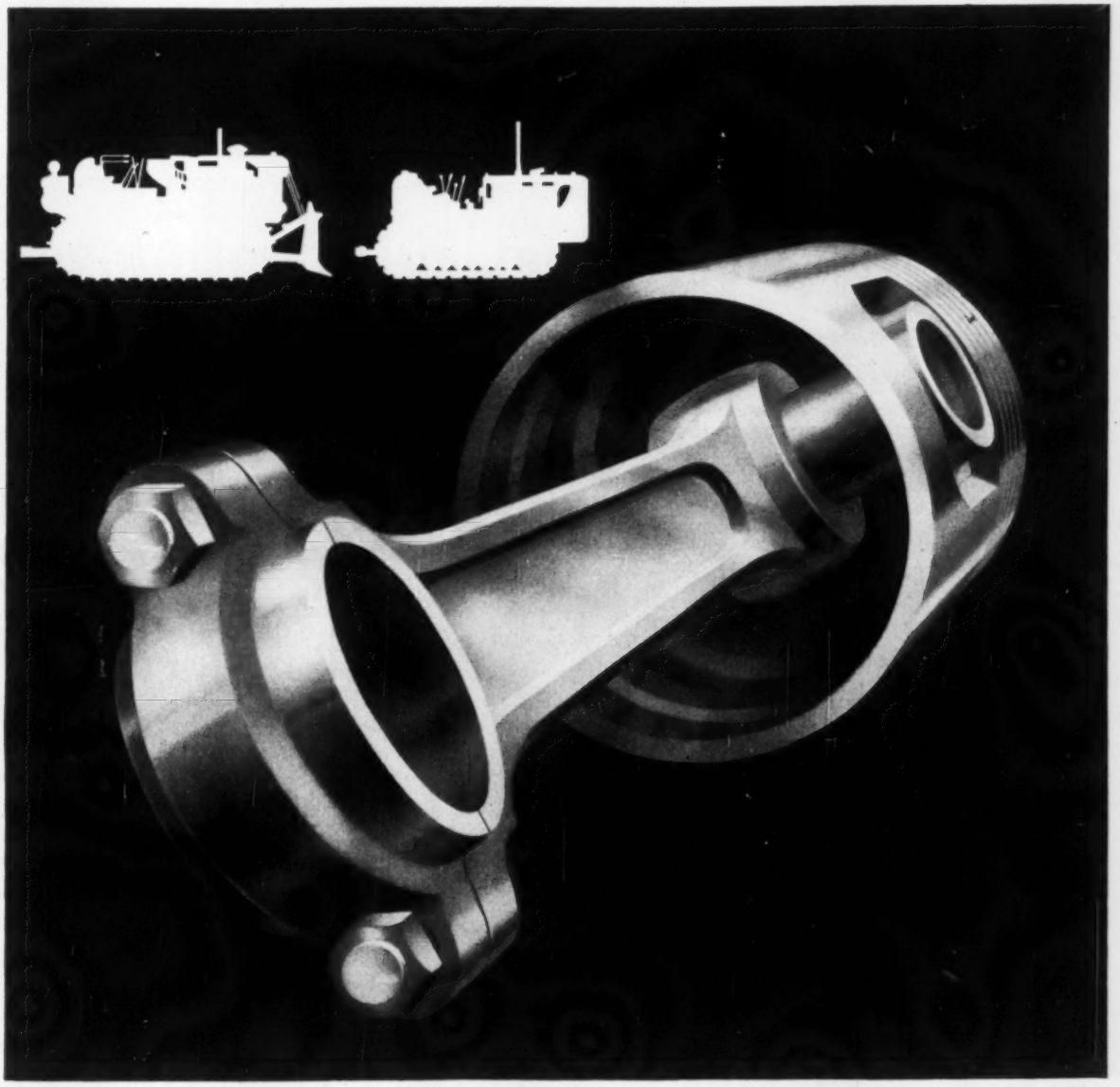

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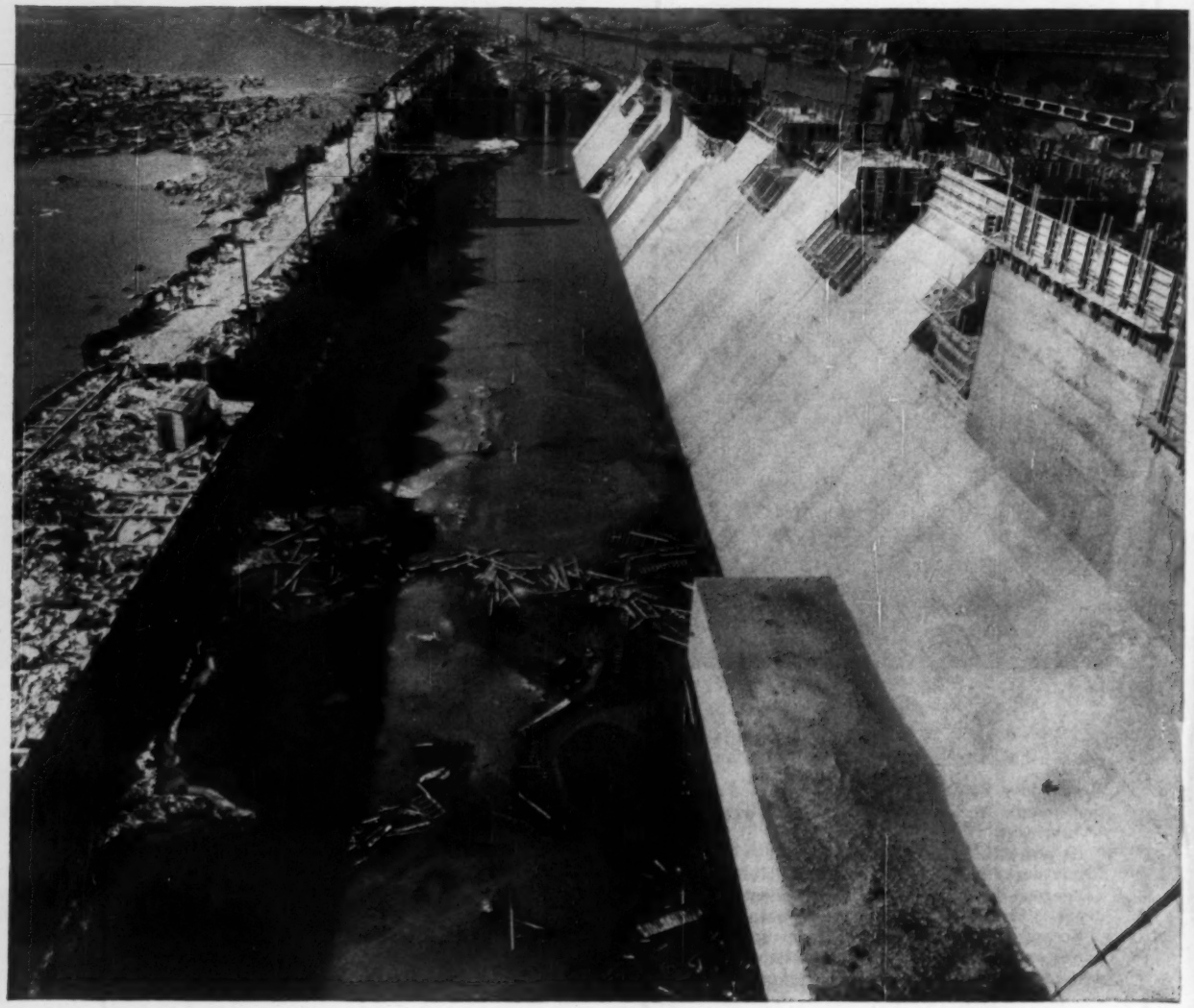
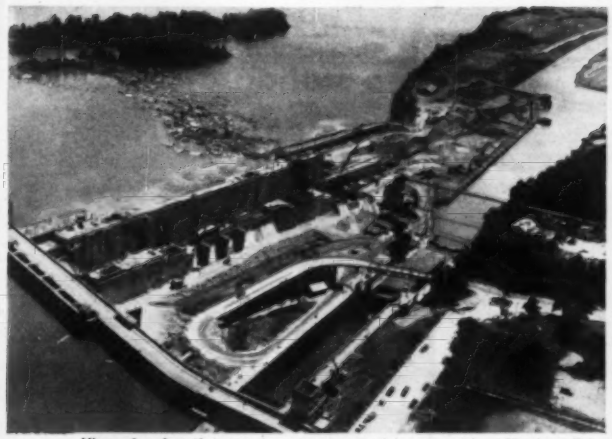
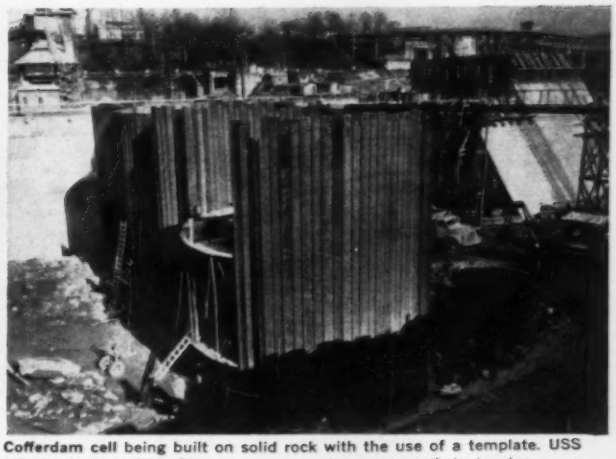


Downstream view showing new Wilson Lock with cofferdam A at left and E at the far end of the lock.



View showing the new temporary canal in use with cofferdam F in background shutting off the entrance of the old canal while it is being deepened by 10 feet.



Cofferdam cell being built on solid rock with the use of a template. USS MP-101 Straight Web Piling assures maximum strength in tension.

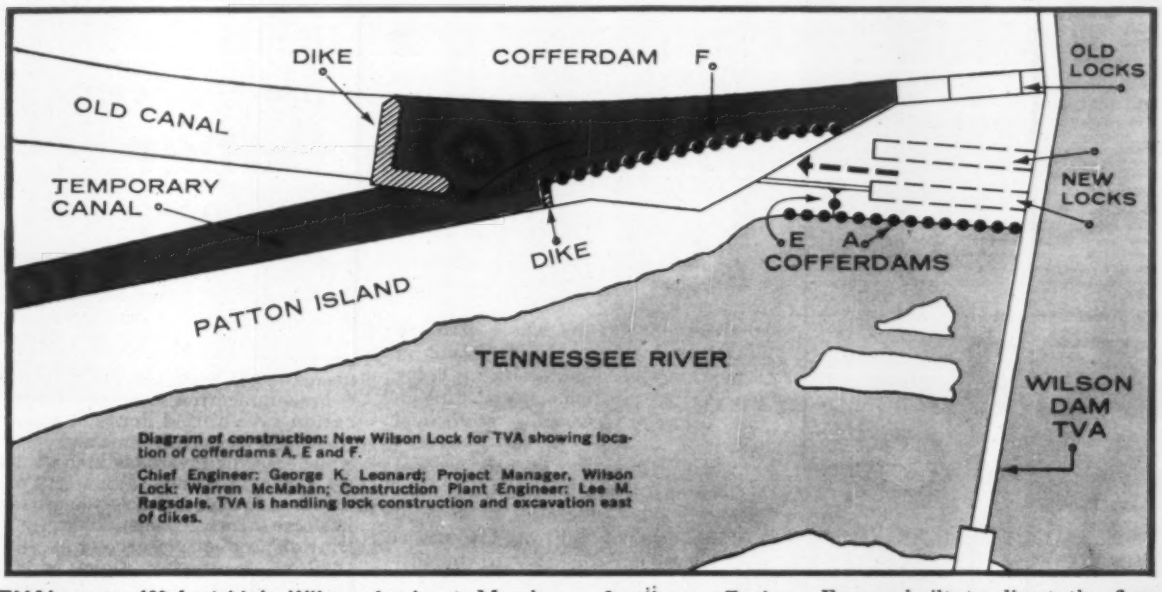


Diagram of construction: New Wilson Lock for TVA showing location of cofferdams A, E and F.

Chief Engineer: George K. Leonard; Project Manager, Wilson Lock: Warren McMahan; Construction Plant Engineer: Lee M. Ragsdale. TVA is handling lock construction and excavation east of dikes.

TVA's new 100-foot-high Wilson Lock at Muscle Shoals, Alabama will have the distinction of being the world's highest single-lift lock. The $35 million construction project includes a 110 x 600 ft. lock chamber through the existing dam, 4 million cubic yards of canal excavation, and a high-level fixed span bridge over the huge lock.

It is quite an engineering feat to construct a new lock through an old dam without interrupting navigation more than a few days. The first two cofferdams, A and E, were built to keep the Tennessee River out of the new lock area. These took a total of 32 cells, each 36.61 feet in diameter, with the USS MP-101 Straight Web Piling ranging from 38 feet to 48 feet in length. The cofferdams were set on rock; consequently, there was no penetration. It took an average of three days to construct and fill each cell.

Another cofferdam, F, was built to direct the flow of water into a new temporary canal through Patton Island and to dry up the old canal which will be made 10 feet deeper. The 58 cells in this cofferdam are 23.88 feet in diameter and are also set on rock. The piling is all in 20-foot lengths of USS MP-101. There was no penetration, and the cells were constructed and filled on an average of one per day.

A total of 3,953 tons of USS MP-101 Straight Web Piling was used for these three cofferdams—and all of it was delivered on schedule. For the new bridge (not shown), USS H-Beam Bearing Piles were used. This is another case that illustrates the excellent deliveries made possible by U. S. Steel's large production facilities and attention to customers' needs. When you want any type of piling—steel sheet piling or H-Beam bearing piles—call the United States Steel office near you.

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. . . Reader Comment

Why Tunnel Doesn't Cave

SIR—Anatole A. Eremin (ENR Sept. 11, p. 12) refers to the possibility of soft material caving in when the tunneling method is the one described in "Liner Rings of Concrete Wedges" (ENR May 8, p. 62).

Most of the tunnel is being constructed in fairly stiff fissured clay, and in some places 6 x ⅜ in. longitudinal steel strips must be welded on 2 ft centers to the rear of the shield to prevent falls from the roof. Where this is insufficient a complete skintail plate is bolted to the shield and another form of precast concrete lining is substituted.

In stiff clay the relative sizes of the concrete lining and the cutting edge of the shield have to be carefully adjusted to allow for the swelling of the clay behind the cutting edge.

E. W. CUTHBERT
London, England

Mufflers: A Must

SIR—In a brief item, "Concrete Pipe Used As Mufflers" (ENR Aug. 14, p. 54), the New Zealand geothermal power plant is erroneously located at Melbourne.

About 18 months ago I had the privilege of visiting North Island at Wairakei, where New Zealand is doing considerable experimental and exploratory work in developing geothermal power.

About 30 bores up to 8 in. dia had been drilled to depths ranging from 500 to 3,000 ft. Pressures at the head vary from 100 to 430 psi. The area is rather noisy and I can assure you that the concrete mufflers are a must for the workmen as well as the inhabitants.

W. J. THOMPSON
Captain, CEC, USN
New York, N. Y.

Right Man, Wrong Spelling

SIR—In your arch dam article (ENR Sept. 11, p. 82) B. F. Jacobsen's name is misspelled. It should read B. F. Jakobsen.

LEONA H. (MRS. B. F.) JAKOBSEN

CALENDAR

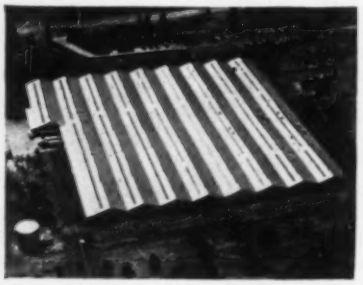
Water Resources Conference, Washington State Institute of Technology, campus of State College of Washington, Pullman, Wash., Nov. 6-7.

Galvanizers Committee, American Zinc Institute, 39th meeting, Pick-Roosevelt Hotel, Pittsburgh Pa., Nov. 6-7.

Institute of Traffic Engineers, 28th annual meeting Hotel Deauville, Miami Beach, Fla., Nov. 10-13.

The Society of the Plastics Industry, Inc., 8th national exposition and conference, International Amphitheatre, Chicago, Ill., Nov. 17-21.

It makes sense to standardize on buildings, too!



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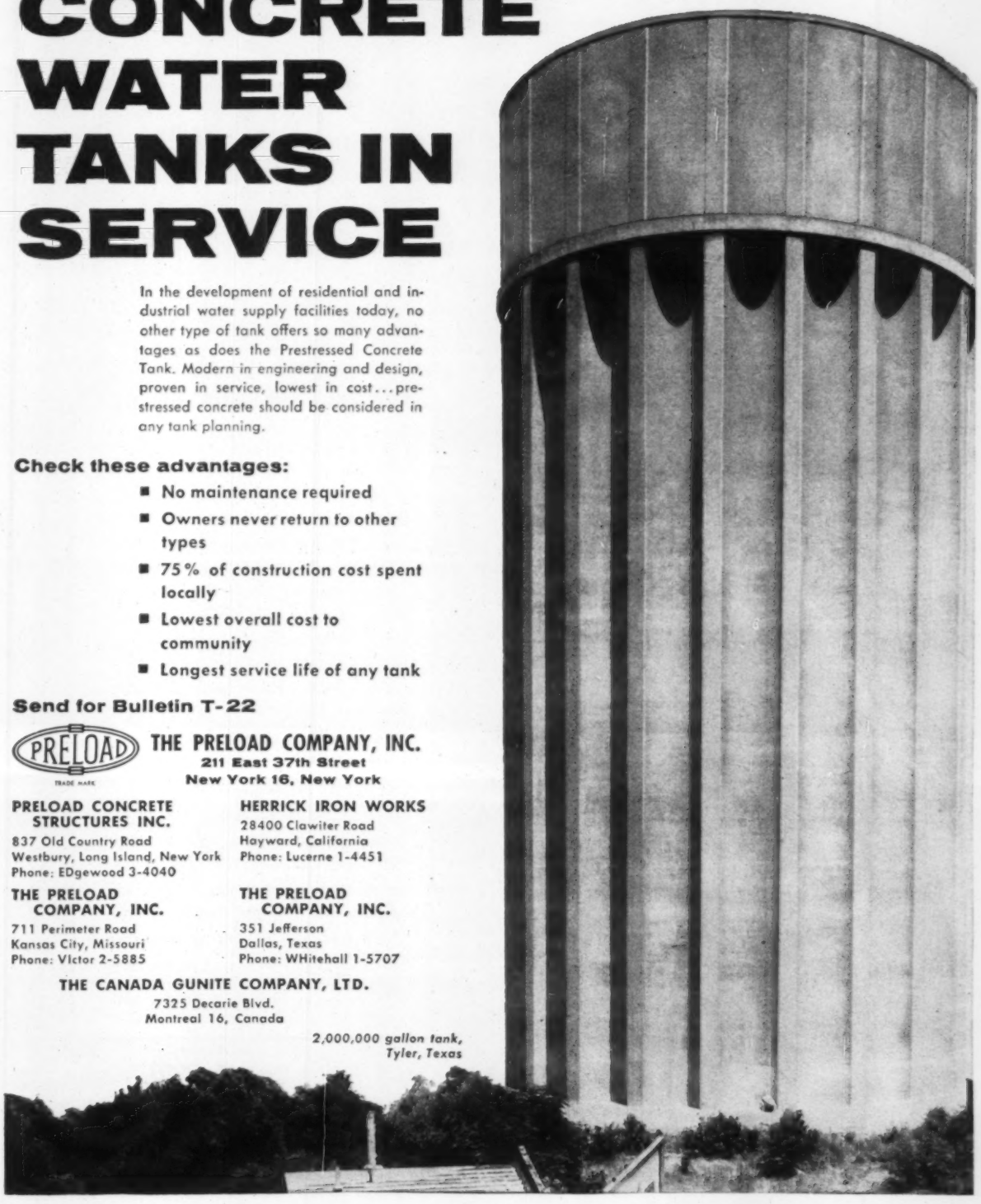

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

CHEAP ATOM POWER?—General Electric Co. has a two-stage plan for reaching competitive nuclear power by 1970. That's the Atomic Energy Commission's target date. GE proposed last week the construction of 50 or more small, boiling-water reactors. The first stage—"Knowhow"—would give utility firms operating experience. The second stage—"Sunrise"—would be to lick cost problems. Reactor cost: $4–4.5 million each.

MOVABLE RADIO 'SCOPES OBSOLETE?—A new radar antenna developed by Westinghouse Electric Corp. works on a different principle than conventional antennas. Without turning, it can scan the sky through a complete circle. If it can be adapted for use as a radio-telescope, a big problem will be eliminated: How to move these huge structures under extremely close tolerance. The antenna is called a Helisphere; it's a globe with narrow, spiral conducting strips embedded in it.

H-BOMB HARBOR FOR ALASKA—Plans are reportedly in the works for thermonuclear blasts to excavate a harbor on Alaska's Arctic Coast. Sen. Henry Jackson (D., Wash.) said last week the $5 million job will be done probably in 1960 at Cape Thompson, 250 miles south of Point Barrow. It will include a 6,000 ft access channel and a 1,000 x 6,000 ft basin.

A CLEARER BUILDING CODE—American Concrete Institute will make the next addition of its Building Code Requirements for Reinforced Concrete more clear. The section of flexural computations will be divided into three parts: general regulations; rules for working-stress design; requirements for ultimate-strength design.

RETRACTABLE ARENA ROOF—Work has started on the concrete foundations of Pittsburgh's $20 million civic arena with a 415 ft dia movable roof. The retractable dome roof will be composed of eight stainless steel sections, six movable and two stationary (ENR Jan. 30, p. 30; June 19, p. 19).

LOWER DESALTING COSTS?—It was forecast this week that the cost of desalting water may be cut in half by nuclear developments:

- A reactor to desalt 50 mgd is being researched for Los Angeles by Fluor Corp.
- The cost of ion exchange processes will be cut as nuclear power costs come down.
- There's also new hope that an irradiated membrane might cut the power needs of the membrane filter process by two-thirds.

These views were expressed at a conference sponsored by the Water Resources Council, Inc., in Las Cruces, N. M.

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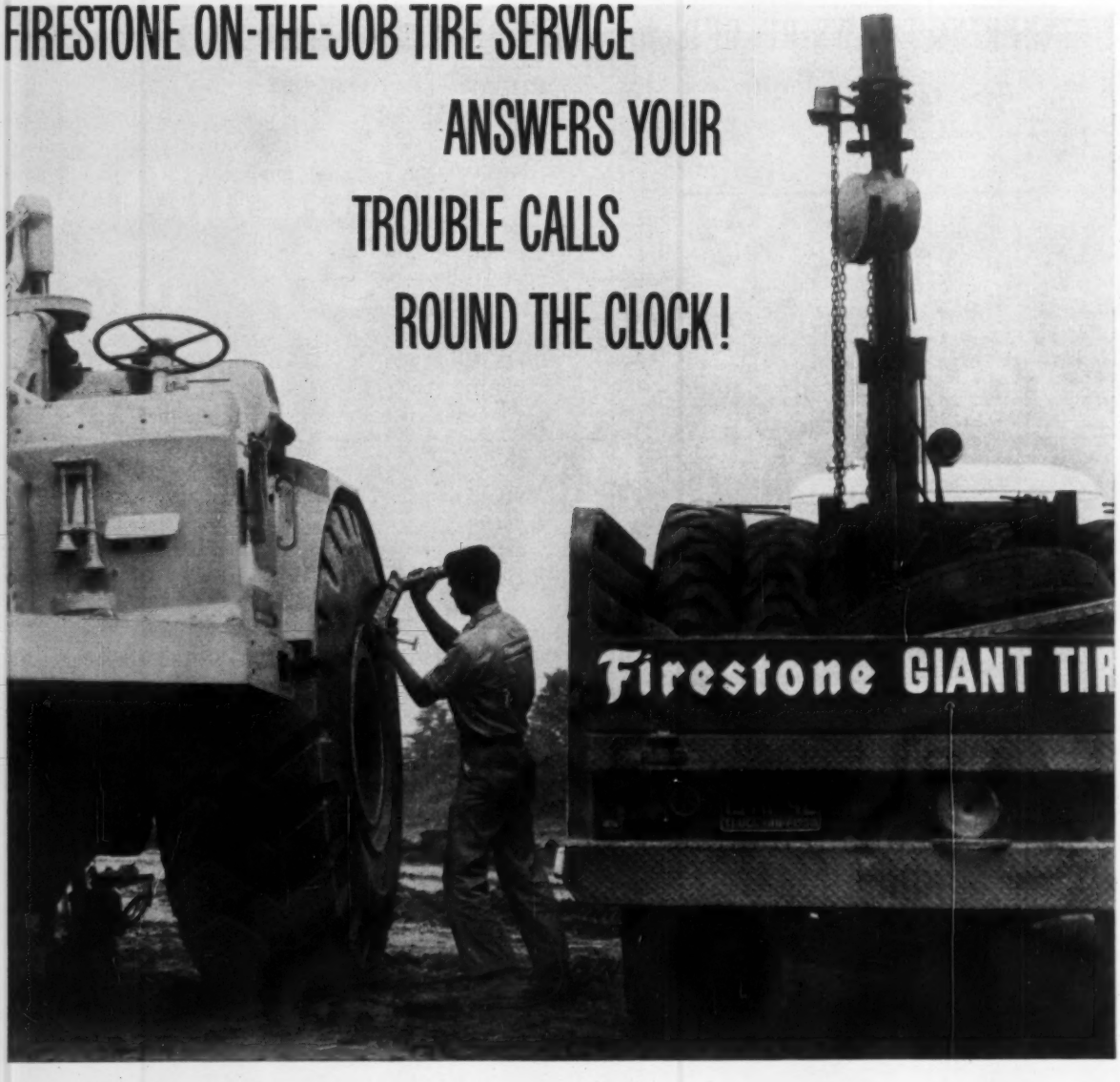

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WASHINGTON OBSERVER

- White House won't cut civil works
- Senate to probe mortgage credit needs

- **The Eisenhower Administration has committed itself to spend the full $1.2 billion Congress voted for Army civil works and reclamation**—rivers and harbors, flood control and reclamation projects. That's what a top official of the Bureau of the Budget told a delegation from the National Rivers and Harbors Congress.

  This means the Administration attempt to cut back spending won't be applied either to military or non-military public works. There had been fears an attempt would be made to hold down spending by trimming back funds for the Engineers and Reclamation, since military projects were found to be uncuttable.

  Real significance of the policy stand is that there will be no hold-back on more than 60 new starts. These are the ones added by the Democrats in Congress over the Administration's protest—the most likely targets of any economy drive.

  Actual spending on these projects will be small this year—but will look large later on. Total cost of completing them will run to $600 million or more. By starting them this year, President Eisenhower is in effect committing himself—for the next two years of his term—to seek the funds needed to bring the projects along. They will add substantially to his construction spending.

  The announcement of the decision was timed to reach the voters ahead of this week's election.

—

- **The mortgage credit needs of the homebuilding industry during the next 10 years will be investigated by the Senate's housing experts.** Some 30 industry experts—bankers, homebuilders, association officials—will be asked to answer specific questions ahead of time. These will be published and distributed around the end of this month. The hearings will be held in late January or early February.

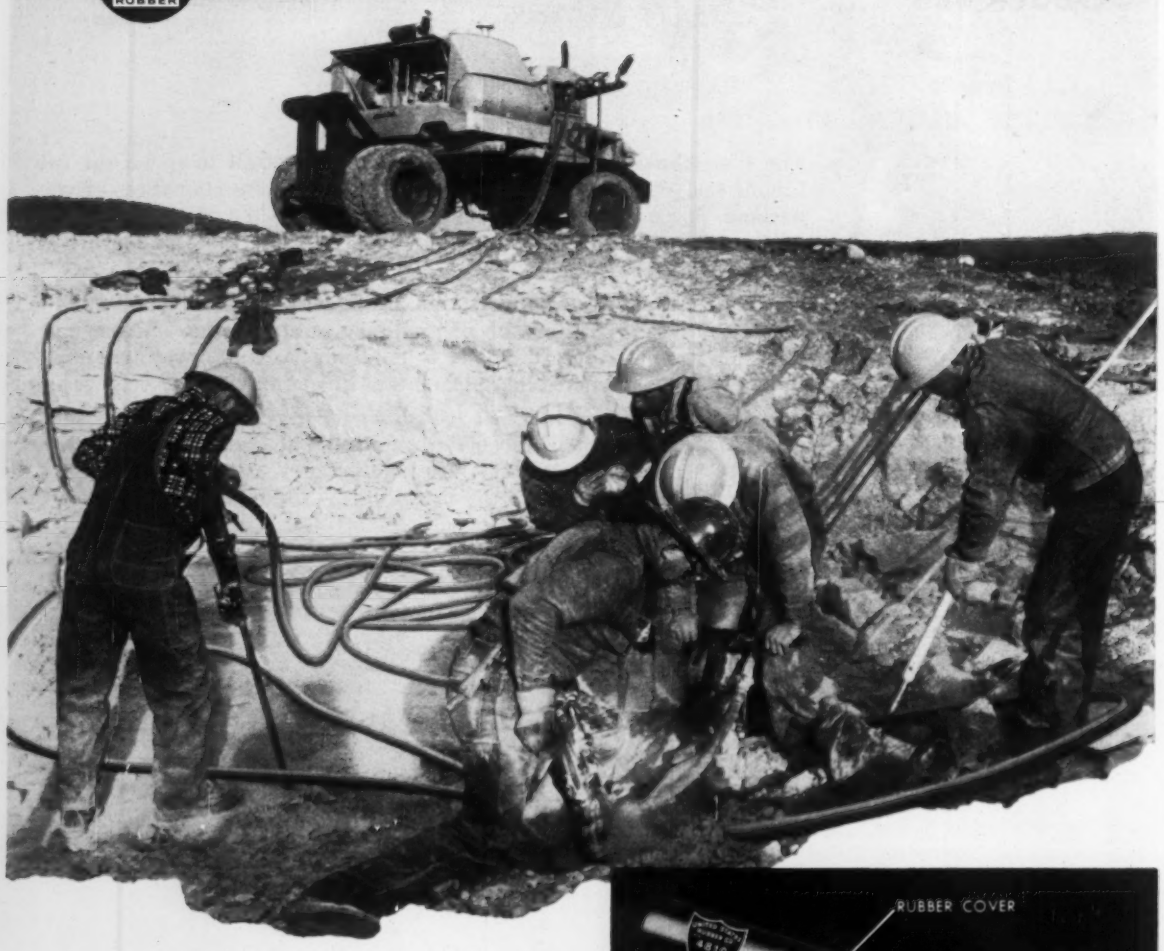
  Here are the kinds of questions for which answers are sought:

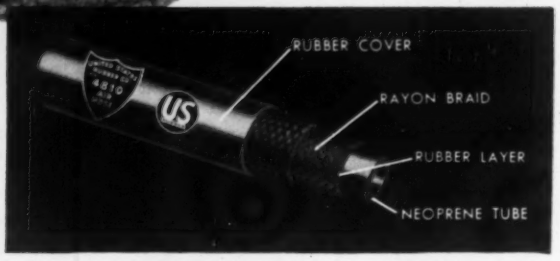
  What are the principal changes expected in residential construction practices and housing components during the 1960s? And how can quality be improved without adding to cost? George Price of National Homes Corp. will write on this.

  What new facilities—public or private—are needed to increase mortgage credit supply and distribution, and how should federal programs be changed to make this possible? Thomas Coogan, of Housing Securities, Inc., and Neal Hardy, of the National Association of Home Builders, will analyze this.

  The study will be entirely apart from the omnibus housing bill the Senate committee will take up early in the session.

US RUBBER 4810 AIR HOSE





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ENGINEERING
NEWS-RECORD

Federal Building Bonanza Coming

- **General Services Administration has plans for more than a billion dollars worth of federal buildings—in 18 states**
- **Right now, there's a construction kitty of $275 million**
- **Coming soon, projects valued at $835 million**
- **It's the result of an effort by Congress and the Administration to catch up on building needs, following a 20-year lapse**

Building contractors during the next eight months will have their greatest opportunity in years to bid on federal projects.

Between now and July 1, the Public Building Service of the General Services Administration plans to invite bids and award contracts on 47 structures in 18 states, Hawaii and the District of Columbia.

Estimated total value of the immediate jobs approaches $275 million. Construction money to pay for the buildings is available from appropriations voted by Congress.

PBS has an even larger dollar volume of authorized buildings in various stages of design. This backlog involves 30 projects valued at $835 million. Many of them exceed $30 million each.

Final design is well along for 20 of these projects worth $500 million. Plans and specifications are complete or approaching completion in the offices of architect-engineer contractors. PBS is firming up preliminary designs for the other ten before awarding architect-engineer contracts for final design.

How soon the future building jobs go into construction depends on the Congress convening in January.

All signs point to continued Congressional support for the federal building program. Both Congress and the Administration have been trying since 1954 to catch up on federal building needs after a 20-year lapse in activity.

Their first attempt—the lease-purchase program of 1954—ended last summer. Then, Congress switched to direct appropriation for federal buildings. A fast sprint in the final months enabled GSA to run up its total of lease-purchase construction to 29 projects with a contract value of about $55 million.

PBS now has some $43 million worth of construction under way on 27 lease-purchase contracts.

The agency is also directing and supervising another $103 million worth of construction under 21 contracts at 15 sites. These projects are being built by PBS in its regular role as design and construction agent for other executive departments and federal agencies.

All told, PBS has an active building program of more than $1.3 billion. By comparison with recent years, when a $50 million annual program looked big, present demands appear tremendous. The agency has grown up to its job. A strengthened and streamlined professional staff handles the load with speed and skill.

Construction money provided by Congress is going to work promptly. PBS aims to commit to contract this fiscal year all of the $275 million currently available. It has already awarded eight jobs. And it intends to run the total up to 55 by June 30.

Contracts to go out for bids by mid-1959 will call for construction of buildings ranging in cost from $300,000 to more than $45 million.

Biggest are the superstructure contracts for two Washington-area buildings: the $46 million headquarters for the Central Intelligence Agency at Langley, Va., and a $36 million museum for the Smithsonian Institution in Washington.

Large projects are also scheduled in the following cities:

Phoenix, Ariz., $9.4 million
New Orleans, $20.5 million
St. Louis, $14.3 million
Brooklyn, N. Y., $15.9 million
Oklahoma City, $8.3 million
Houston, $16.6 million
Richmond, $8.6 million
Washington, D. C., $15.6 million

The backlog of future jobs, however, is much larger. Of the 20 now being designed by architect-engineer firms, the biggest is an $86 million layout for the Bureau of Standards at Gaithersburg, Md. Next in size are federal buildings at San Francisco, $48 million; Los Angeles, $32 million; Dallas, $24 million; Cincinnati, $23 million; and three for Washington, D. C., ranging from $17.5 to $24 million.

High-cost projects make up an even heavier proportion of the buildings PBS has under preliminary design. The largest of these is for New York City and will cost $68 million. Two Washington buildings will cost $35 million and $30 million. And four in the $20-$30 million bracket will go to Boston, Pittsburgh, Baltimore and Denver.

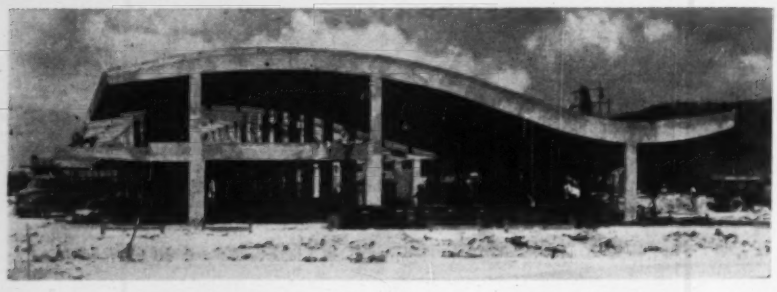
Preliminary planning is still to begin for four more buildings. These are a $98 million federal building for Chicago, an $11.5 million building for Memphis, a $3.6 million project at Bismarck, N. D., and a $22 million Geological Survey headquarters for Washington, D. C.

Most of the federal buildings that PBS is designing or constructing are the multiple-purpose type required for government operations in almost any city. There are about 60 of these.

The agency does special-purpose building projects for specific departments and agencies. These specialized projects often are the general office building type.

But somewhat more technical in their demands are laboratories and specialized facilities the agency is building or designing for the Agriculture Department, the National Institute of Health and the Bureau of Standards. Under construction are a $14 million animal disease laboratory at Ames, Iowa, and five smaller agricultural research laboratories at other locations.

Runway with high-speed turnouts went on dredged fill.



Curved precast members carry the roof of new terminal building.

Jamaica Gets Set for Jets

Jamaica's two international airports —at Kingston and Montego Bay—are being readied for jet-plane use.

A new, jet-age runway on dredged fill at Kingston boasts three high-speed exit taxiways. They angle off the runway to allow planes to leave at up to 60 mph.

[Only recently (ENR Oct. 23, p. 19) such high-speed exits were reported as being studied for U.S. airport design.]

At Montego Bay, Jamaica's north shore tourist center, $1.7 million worth of construction is going into a new terminal building, approach lighting, taxiways and parking aprons. The terminal building will have a curved roof supported on precast concrete members.

At Kingston, Jamaica's commercial center, the planned terminal building alone will cost $1.7 million. But the new 7,600 ft runway is at present the center of engineering interest.

It is entirely on dredged fill compacted to 2 ft 6 in. to carry a 6 in. subbase, a 5 in. soil-cement base course and a 3 in. asphaltic concrete pavement. The runway itself will cost some $2.8 million; the cost of reclaiming land for it ran about $3.5 million.

McWilliams Dredging Co. of New Orleans placed 10 million cu yd of granular material. In the process, its dredge pumped muck and peat right along with the underlying sand it was after for fill. The theory was that the undesirable material would float or wash away and leave only the good sand as fill. And it did.

Sir Alexander Gibb & Partners of London designed the Kingston runway.

State Anti-Pollution Body Issues First Complaints

Kentucky's Water Pollution Control Commission has issued the first non-compliance citations in its eight-year history. The body has accused three towns with old and inadequate sewage treatment plants of polluting the Ohio River. Hearings on the complaints will be held next month.

Under Kentucky law, municipalities can be fined up to $1,000 a day.

Aswan Dam Deal

Some observers see trouble ahead for Russia and Egypt

The United Arab Republic's just-completed deal with the Soviet Union on the Aswan High Dam significantly widens Russia's economic and political beachhead in the Middle East and deepens U.A.R.'s entanglement with the Communist bloc.

That's bad. The only question is: How bad?

Washington is talking down the implications of the Soviet agreement to lend Egyptian President Gamal Abdel Nasser 400 million rubles for the first stage of the project. Officials predict that the undertaking will mean serious problems for both President Nasser and the Soviets. They don't think the deal rules out progressive normalization of U.S.-Egyptian relations.

But President Nasser may have given Premier Nikita S. Khrushchev some political promises in exchange for the Soviet loan, officials believe. One possibility is an agreement on Cairo's part to restore to the Syrian Communist Party all or part of the political freedom taken from it when Syria and Egypt merged to form the U.A.R. Egypt, also, has clamped down on local Reds.

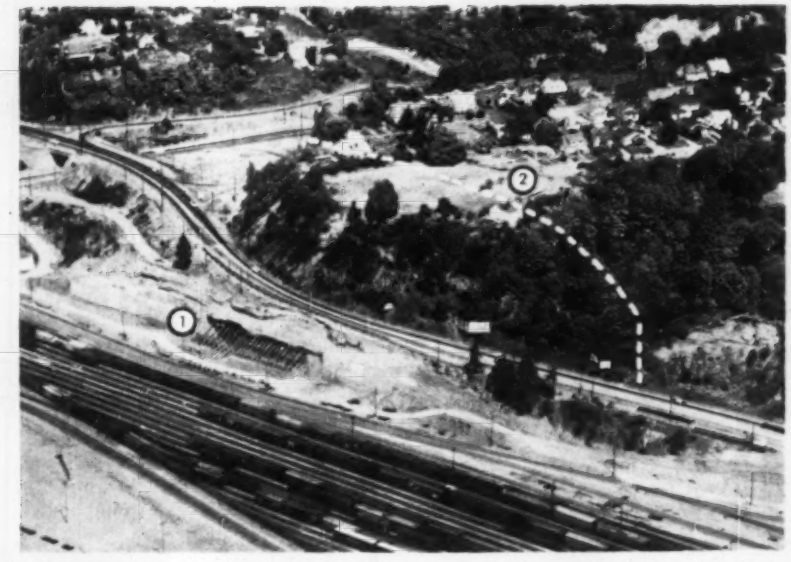
The loan is the second biggest Soviet aid outlay for a single project. (The Bhilai steel mill in India is first.) Russia's aid to the U.A.R. now totals nearly as much as its announced aid to Red China.

The Aswan deal increases Cairo's dependence upon Moscow. But this may bring future embarrassment to both.

President Nasser will have to bargain with Moscow for more cash as the project develops. The Soviet loan apparently equals less than one-third of the foreign exchange costs envisaged by the West for the first stage of the dam. President Nasser's trade dependence on the Soviet bloc is bound to make him more vulnerable to Communist political pressure.

But beyond that, the massive investment of Egypt's already overstrained resources in the Aswan Dam will increase inflation dangerously and could well force President Nasser to appeal to Moscow for consumer goods to relieve the pressure.

Moscow may be embarrassed by President Nasser's rising demands for aid. They will mean new burdens for the strained Soviet economy. The Aswan loan also certainly will whet the appetites of other underdeveloped countries for more Soviet assistance. And the Soviets will find it hard to renege on its commitment to see the $1.3 billion, 15-year Aswan project through.



COLLAPSE of new retaining wall (1) makes it necessary to cut back steep hillside to point 2. The wall cost $450,000.

Wall Failure Proves Expensive

The Union Pacific Railroad is abandoning a new concrete retaining wall that collapsed last April in the railroad's Albina yard, Portland, Ore.

The company will have to pay for cutting back a steep hillside behind the wall location to a 1½:1 slope. It will straighten 1,000 ft of four-lane street—damaged when the wall collapsed—and move it 73 ft from its present location. And it will relocate 390 ft of an access road to the yard.

Morrison-Knudsen Co., Boise, Idaho, started the work last month on the 165,000 cu yd excavation job, much of which will be on 6.2 acres of private property that the railroad company has purchased above the street.

The retaining wall, said to have cost $450,000, had a maximum height of 70 ft and was about 550 ft long. Of cantilever type, it was 7 ft thick at its base, tapering to 18 in. at the top.

The 240 ft section in the center of the wall collapsed just as construction was nearing completion. It rotated about its foundation and fell outward, bending or breaking the reinforcing steel that tied the two elements together. After the failure, the braced line of steel sheetpiles shown in the photograph was installed in the opening to hold the sand and gravel hillside and protect the street from further damage.

The recommendation that the wall be abandoned and the hill sloped up to the street and beyond was made by Cornell, Howland, Hayes & Merryfield, consulting engineers, Corvallis, Ore.

NSPE Pushes Fund Drive With a Gimmick

The National Society of Professional Engineers is pushing a drive for voluntary contributions among members to "bridge a financial gap until readjustment in the society's dues structure is possible."

As a gimmick, NSPE urges all members who will donate one dollar for each year they have been registered professional engineers to submit an experience resume. A panel of judges will choose, from the resumes and by investigations and interviews, a "good will ambassador, and his wife." The couple will be dispatched abroad on a tour of engineering installations and societies.

It's called Project Ambassador; all entries are due in by November 15, and the winner will be announced at NSPE's February meeting in Birmingham.

It's too soon to tell how the fund drive is going, but early returns indicate it will succeed. While NSPE has no actual goal, it will have to cut its programs unless it gets $150,000 in the next year and a half.

NSPE's executive director, Paul H. Robbins, reports interest and debt retirement are on schedule for the Washington, D. C., headquarters building. It was financed by issuing $400,000 worth of bonds on a 20-year redemption schedule. Bonds are held by 3,000 individuals, in amounts varying from $100 to $2,500, and are paying 4%.

Fish Come First

Interior Secretary asks for delay in Snake River dams

Secretary of the Interior Fred Seaton opposes Army Engineer plans for dam-building on the Middle Snake River until satisfactory fish passageways can be developed.

In a letter to Secretary of the Army Wilbur Brucker, Mr. Seaton last week urged the Army Engineers to defer planning and recommendation of more dams on the Middle Snake below the confluence of the Imnaha.

All the Engineers' proposed dam sites are under "complete review" at the Pentagon. A new master plan for comprehensive development of the entire Columbia River Basin will probably be released in mid-December.

Secretary Seaton also pointed out that preliminary studies indicate there are storage sites on the Snake River above the Imnaha that can be developed now without injury to migratory fish. He said these reservoir sites "taken together with other projects in the general (Middle Snake) area which can be undertaken after the fish-passage problem is satisfactorily solved, will meet the objective of full comprehensive development."

The partial washout of fish trap facilities recently by high water at Idaho Power Company's Oxbow site (ENR Sept. 25, p. 28) has "brought into focus the need for the fullest consideration" of protective fish facilities in planning water resource projects, Mr. Seaton concluded.

Model Water-Use Act Termed too Sweeping

The University of Michigan's model water-use act is "too abrupt and sweeping" to be acceptable. So stated Milton P. Adams, secretary of the Michigan Water Resources Commission, last week.

The model water law was completed recently by a Michigan Law School team under the direction of Prof. William J. Pierce. Sponsor was the National Conference of Commissioners on Uniform State Laws (ENR Sept. 12, 1957, p. 25).

Mr. Adams spoke in St. Louis at the American Public Health Association's 86th annual meeting. He noted that the proposed act would establish a single state administrative agency with control of all water resources. He said his reservations regarding the model legislation were shared by others.

He warned, however, that failure of states to enact adequate water-use laws might invite action by the federal government.

The Nation's

Washington D.C.'s World War II temporaries are being replaced.

After years of delay demolition of Washington, D. C.'s unsightly "temporaries" and construction of new federal structures are finally under way.

"Temporaries" are wood frame structures erected during World War II to house the growing population of government personnel. Today, more than 40,000 employees still work in these structures. Government agencies occupy more than 5.5 million sq ft of office space in 39 temporary buildings that encumber 125 acres of parkland and encroach on the Washington Monument grounds. And temporaries clutter the two-mile mall from the Lincoln Memorial to the Capitol.

Two structures destined to be torn down even date back to World War I. They are the Navy and Munitions buildings—sprawling reinforced concrete temporaries of 1917-18 vintage.

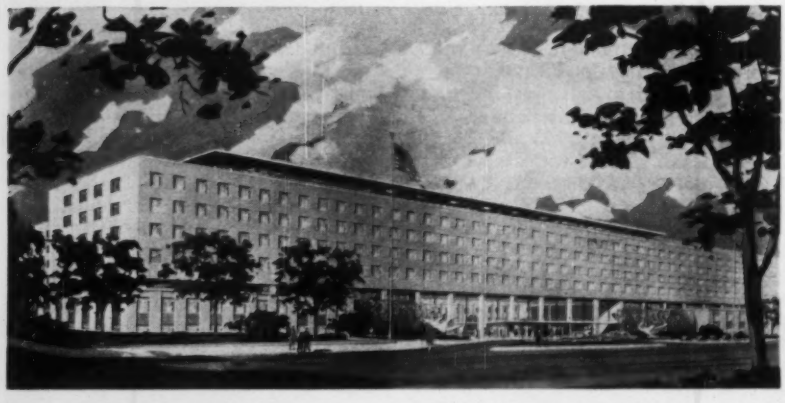
Their removal marks the beginning of a long-term construction program aimed at providing new quarters for government agencies.

• **Work in progress**—Three new buildings are now under construction and contracts are being advertised for a fourth; four more are on designers' boards and another pair will be ready for design contracts within a few months.

Two office buildings are now being erected; one downtown for the State Department, and another—costing $46 million—for the Central Intelligence Agency. The CIA building is across the Potomac River at Langley, Va. Foundation work is in progress for a long-needed building to house the Smithsonian Museum of History and Technology in the heart of town.

In addition, the Atomic Energy

New federal office buildings are part of a $500 million program.



State Department building is one of the largest under way.

Addition to Smithsonian Museum

Capital Is Getting a New Look

Commission has moved into its new $13 million structure some 25 miles out in Maryland. And the Capitol building front is being extended 32½ ft, adding space for 62 new offices, two restaurants and nine storage rooms.

All of this construction is being paid for with funds provided by Congress for the purpose. Only one of the four structures currently on design boards, however, has received a building appropriation.

• **Financing needed**—Money will remain the crucial factor in determining how rapidly new buildings can be erected in Washington. Congress faces a perplexing problem in apportioning limited building funds under tight budgets that must first take care of mounting defense costs.

Parcelling out money for buildings is complicated by the fact that the federal government needs new structures in every part of the country. Congressmen, quite naturally, give first thought to needs back home. Voteless Washington has no political inducements to offer when it appeals for funds.

Congress this year showed its concern over the government's building plight by voting GSA nearly $40 million for the total nationwide federal building program. Of this, $15.2 million was specifically earmarked for D. C. buildings. The next Congress, which convenes in January, is expected to be equally considerate of new requests.

The accomplishments so far are descended from a double-barreled construction and demolition program that the General Services Administration presented to the House Public Works Committee in 1955. Its purpose was to provide badly needed facilities for federal employees and to increase efficiency (see p. 21).

The proposal called for 13 new buildings in the first three-year phase of a ten-year program, 1956-66. Nine additional buildings were scheduled for the two later phases. Total cost of the 22 buildings is estimated at more than $500 million.

The $10 million cost of renovating the U. S. Capitol is being paid for by a separate Congressional allocation.

• **Razing the old**—Seven temporaries have been razed in downtown Washington. Future demolition awaits the start of other buildings now under design for GSA's Public Buildings Service.

Federal Office Building No. 6, costing $15.6 million, will soon go out for construction bids. It will provide 350,000 sq ft of net floor area when completed in two years. Barring unexpected growth of the federal establishment in Washington, three holdovers will then be torn down.

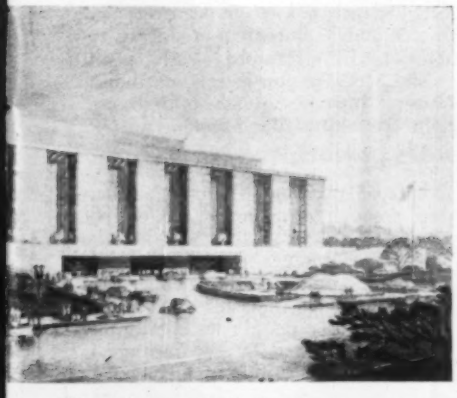
Plans for FOB 10—really a pair of buildings—will be completed within a few months. This $41 million project will add 754,000 sq ft of permanent floor space and permit the demolition of several temporaries, including three that now mar the Washington Monument grounds.

Two other buildings, now being designed, will increase federal efficiency; but they won't replace temporaries. FOB 9 will enable the Civil Service Commission to vacate an old building of classical design that originally housed the Patent Office. This structure will be turned over to the Smithsonian Museum for use as an art gallery.

FOB 8, a $12.3 million structure, will provide 277,000 sq ft for expanded laboratories of the Food and Drug Administration. Completion of this job will permit razing of the old auditors buildings.

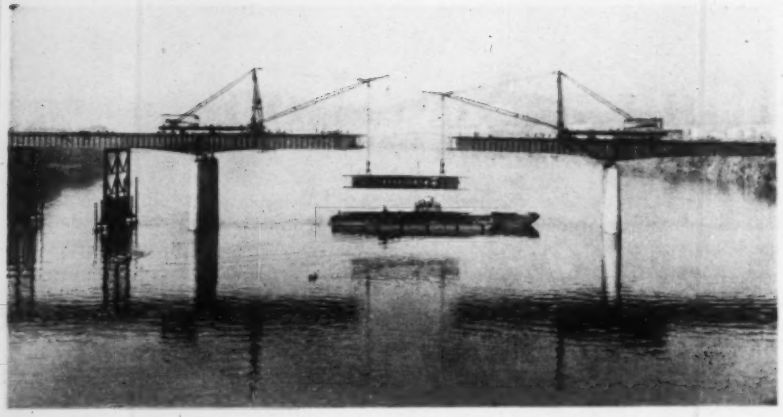
GSA expects soon to award a design contract for FOB 7 with a cost limit of $27.5 million. This building will house the President's executive office staff. The Court of Claims building would be removed in clearing the site.

FOB 7 would be the first move toward carrying out the recommendations of the Commission on Presidential Office Space. Its construction would permit demolition of the old State, War and Navy building now occupied by the Budget Bureau and other executive offices. This site, alongside the White House, would be used for an office building for the President's staff.



will give needed display space.

U. S. Capitol is being extended, adding space for more offices.



Alloy Steel Cuts Bridge Weight

Steelwork is nearly completed for a 2,641 ft long highway bridge of high-strength steel over the Tennessee River at Chattanooga. The structure incorporates three-span, continuous, riveted plate girders with a central span of 375 ft, just 12 ft short of the record-breaking span over the Quinnipiac in Connecticut.

To reduce weight, A. F. Hedman, Chattanooga consulting engineer, specified a medium-manganese steel (equivalet to ASTM specification A242) for all members where stress controlled the design. This enabled him to design with a basic allowable unit stress of 24,000 psi, instead of the 18,000 psi for ordinary structural steel.

Known as the Cedar St. Bridge, the new structure will carry four lanes of U.S. 27 traffic on its two 26 ft wide concrete roadways. It will cross the 350 ft navigation channel at a height of 72 ft.

The bridge contains 15 simple and continuous spans. Its roadways are supported on four lines of girders, the heaviest being the exterior lines. In the long, continuous spans, the heaviest 375 ft girders weigh 306 tons each and the 275 ft side-span girders weigh 197 tons each. The center-span girders are 12 ft deep at midspan and nearly 19 ft at the supports, where a horizontal splice was needed because of the depth. They have one horizontal stiffener in addition to the usual vertical stiffeners. The side-span girders taper to a minimum depth of about 10 ft.

Bethlehem Steel Co. erected the 6,572 tons of steel in the superstructure. The continuous girders were placed by the cantilever method, the closure sections being positioned on October 22. These were 100 ft long units, weighing 73 tons. Delivered by barge to the middle of the river, they were picked up by two 115 ton stiffleg derricks on the bridge deck and lifted into place.

Trench Too Wide, Sewer Failed

Two engineering firms blame an overly wide excavation for failure of a 36 in. vitrified clay-pipe sewer last summer in Middletown, Ohio. They investigated for the owner and contractor after breaks affecting 1,200 ft of the sanitary line were discovered while the pipe was still under construction.

Cost of the pipe in place is $55 a foot, which brings cost of the failure to $66,000. The city says the contractors have refused arbitration to determine responsibility. However, talks aimed at finding a settlement are still going on.

"Overload on the sewer" was "inescapably" the cause of the failure, concluded Havens & Emerson, Cleveland consulting firm called in by city authorities. The overload was an effect, the Havens & Emerson report stated, "of (a) too wide a trench at the top of the sewer and (b) probably insufficient bedding of the pipe."

Burgess & Niple, Columbus consulting engineer, was retained to investigate by Tony Vitelli & Son, Detroit subcontractor that built the section of sewer involved. Burgess & Niple reported: "The method described to us as being used for installation of the pipe . . . may be expected to result in pipe failure in the material encountered at the depths the work is being done."

Burgess & Niple also questioned adequacy of the construction method specified by the city:

"In our opinion if the pipe were installed with the maximum trench width to be the inside diameter of the pipe plus 2 ft it would sustain the load but a safe structure would not result. The City Engineer's interpretation of the specified method of bedding as being 'First Class' is not acceptable."

Havens & Emerson took a different view of the bedding requirements: "The specifications . . . do not use the words 'first class bedding,' but the requirements signify such." Havens & Emerson define first class bedding as placing conduit material on fine granular material in earth so that at least 60% of the conduit width is so supported, and the remainder of the pipe surrounded to at least 12 in. above the top with granular material carefully placed by hand and thoroughly tamped in layers not exceeding 6 in.

Construction of the sewer involved a portable sheeting box 7 ft wide, 7 ft high and 16 ft long. It was similar to a box that was, coincidentally, proved out on another Middletown sewer job several years ago (ENR Aug. 14, 1952, p. 43). Set down in the excavation, the box provides a safe working place without requiring that the trench walls be sheeted.

Procedure on the current job was to excavate to the level of the pipe center, place the box, excavate to subgrade by hand inside the box, and lay the pipe.

Corrective measures suggested by Havens & Emerson include removing the broken pipe and replacing it or inserting a corrugated steel liner inside the pipe. Burgess & Niple recommend upgrading the specified bedding.

McCone: No Real Issue in Public vs Private Power

It's foolish to let the private vs public power controversy hold up construction of nuclear power plants, declared Atomic Energy Commission Chairman John A. McCone last week.

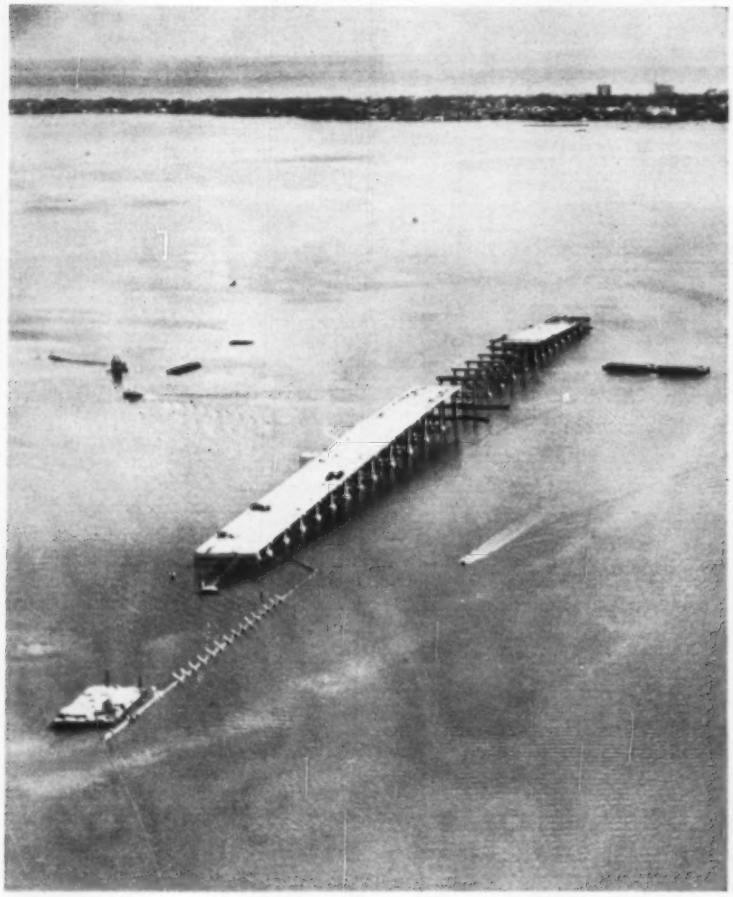
"Maybe 10 or 20 years from now this issue may be real," the ex-California construction man says, but now "the argument makes no sense."

He was referring to the tug-of-war between the Administration and the Democratic Congress. Projects voted by Congress that the White House objected to include a 40,000 kw gas-cooled reactor and a plutonium-producing reactor at AEC's Hanford, Wash., plant.

Mr. McCone also gave some indications of how he intends to walk the tightrope between the opposing sides:

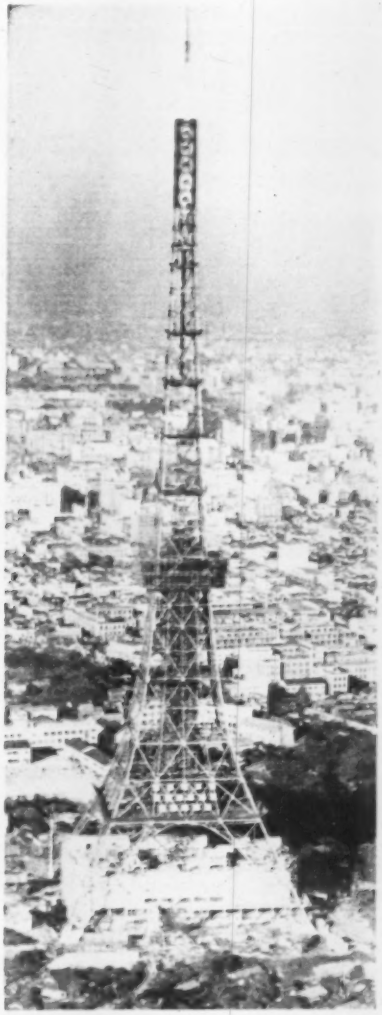
- Federal construction of the gas-cooled reactor will go forward unless an acceptable government-industry partnership proposal is made by the end of November.
- The plutonium producer will be built unless a review now under way by Mr. McCone indicates otherwise.

Mr. McCone doesn't necessarily buy the idea promoted by key Democrats that AEC should build or finance successive generations of reactors of a particular type.



The Ends Will Justify the Center

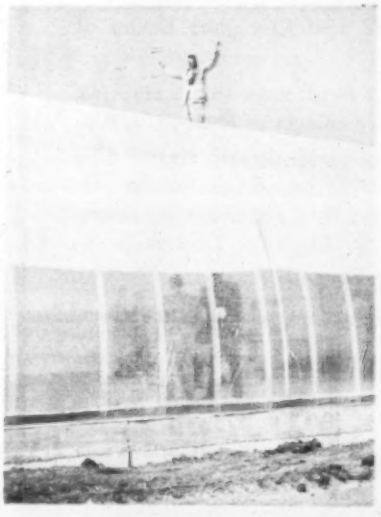
Builders of a new causeway across Florida's Biscayne Bay decided to start at the center and work out to the ends. Interim result is a roadway that seems to start and finish in water. The 36th Street Causeway will link Miami and Miami Beach.



Tall TV Tower Topped Out in Tokyo

It looks like the Eiffel Tower but it's 105 ft taller. This 1,089-ft Tokyo TV tower is scheduled to be opened December 23—the birthday of Crown Prince Akihito. The installation will serve more than 18 million people within a radius of 62 miles when all six TV stations there transmit at peak output.

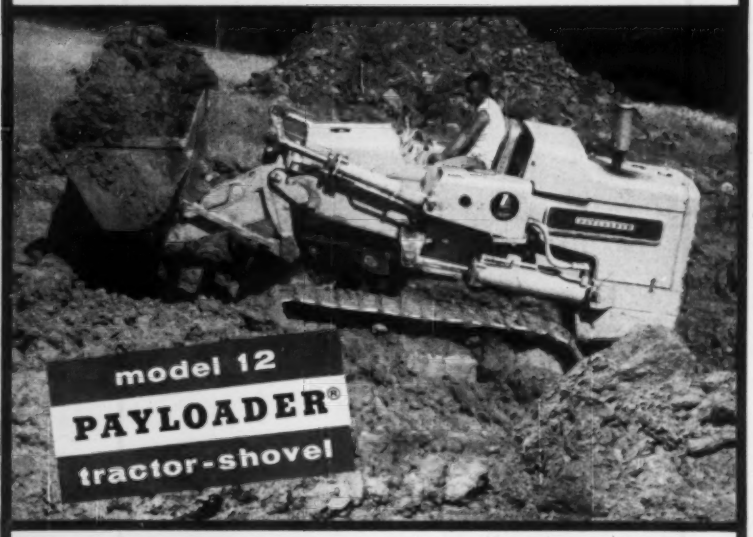
More than 3,600 tons of structural steel went into the tower. High tensile steel was used for the 260-ft TV antenna at the top. Foundations are concrete piles sunk to a depth of 106 ft. A restaurant will operate on the observation deck halfway up the tower.



Air Pressure Supports Plastic Roof on Manufacturing Plant

An air-supported plastic building has been constructed for a plastics maker in Northfield, Minn. The G. T. Schjeldahl Co. will use the building for production. The cylindrical shell—30 x 340 ft—is anchored to a concrete foundation. The enclosure is a polyester film reinforced with nylon fiber. It is supported by 5 psf air pressure, won't collapse if punctured or torn, and will resist winds up to 100 mph, the manufacturer claims.

Users Report on Advantages



Balance: "The Model 12 is balanced so well you can go out of the basement frontwards or backwards with ease" says contractor John Guildenzoph, Manhattan, Ill.

Ease Of Operation: "The Model 12 is much easier on the operator than any machine I ever operated. I can run it all day and still feel good," said Phillip Bruno of Jewett Sand Company, Jonesville, New York.

Visibility: "Awfully nice machine to run. Center seating gives you a smoother ride and you can see what you're doing better than with any other tractor-shovel," says John Drifus, Jr. of the John Drifus Co., Joliet, Illinois.

Speed: "The speed with which it operates can only be appreciated by seeing it work. The torque converter and automatic transmission save precious seconds every time you change direction. We bought the Model 12 to replace a larger machine and since speed and capacity go hand in hand, indications are that we haven't sacrificed either," said contractor John Devins of Westen, Ontario, Canada.

Production: "I can heap load a 10 yd. truck from a stockpile in 1 minute," says contractor John Beninger of Sheboygan, Wis.

If you are still using conventional tractor-shovels, find out how much more this remarkable new "PAYLOADER" can do for you. Return the coupon for complete details today or ask for a demonstration on your job. The Frank G. Hough Co., Libertyville, Ill.

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Engineer Enrollment Drops As College Frosh Increase

There's a 12% drop in the number of engineering school freshmen this year. Nationwide figures from 62% of the engineering schools now confirm earlier regional reports.

Enrollment in 136 schools, which had 51% of the engineering freshmen in 1957, dropped to 34,928 this year from 39,736 last year.

College enrollment other than engineering has gone up about 5%, the federal government's Office of Education estimates.

If the 12% drop holds when complete figures are in, engineering students will comprise about 9% of all freshmen this year; for the past five years they ran about 10.5% of the total. Before World War II the figure was 8%.

There is no breakdown yet of the types of engineering enrollment.

Office of Education officials predicted that enrollment of engineering freshmen would jump 5% this year. They offer no explanation for the reversal. However, one official recalled a rash of published stories last spring saying the engineering shortage was over.

Previous publicity about "the engineering shortage" drew fire at the recent meeting of the National Society of Professional Engineers (ENR Oct. 30, p. 27). NSPE called engineer shortage stories "a disservice to the nation and the profession." President Clark A. Dunn reported that in the next five years there will be 48% more engineering graduates than in the last five years.

Pennsylvania Court Says State May Regulate Dams

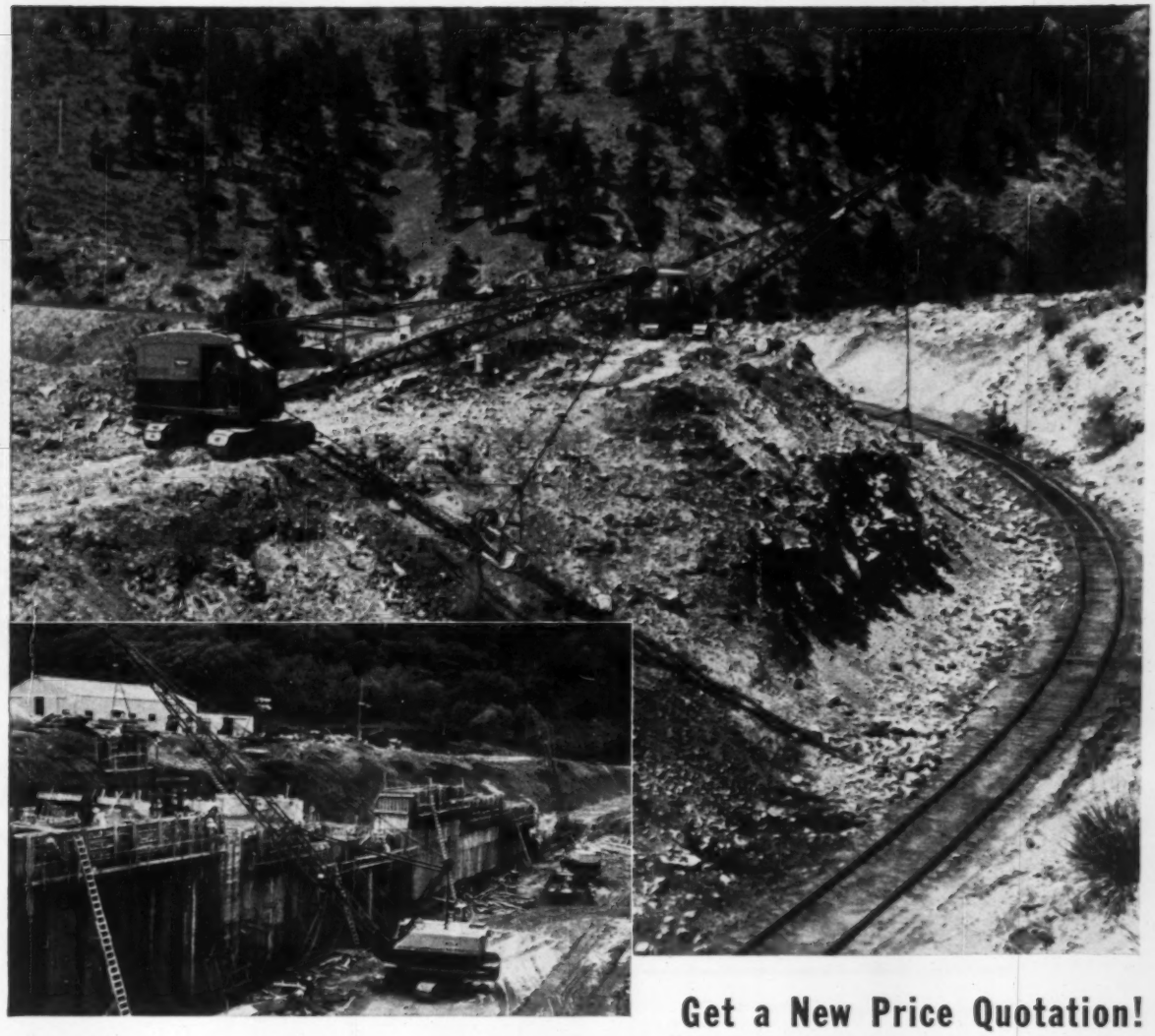
Pennsylvania's Supreme Court has ruled that the State Water and Power Resources Board can regulate construction and operation of dams and other obstructions in streams and rivers.

The high court's decision reversed a lower court ruling that had declared unconstitutional an act setting up the board. Passed in 1913, the act had never been challenged until this year.

The state brought the case in a suit to prevent the Green Spring Co., Inc., a commercial fish hatchery in Cumberland County, from raising the height of its dam 17 in. The hatchery built up the dam without securing a permit from the water board.

Cumberland County Judge W. C. Sheely ruled the board did not have the power to intervene because the 1913 act was too vague, and thus unconstitutional.

The Supreme Court stated that the act had to be general because it would be impossible to write specific legislation that would cover the thousands of rivers within the state.



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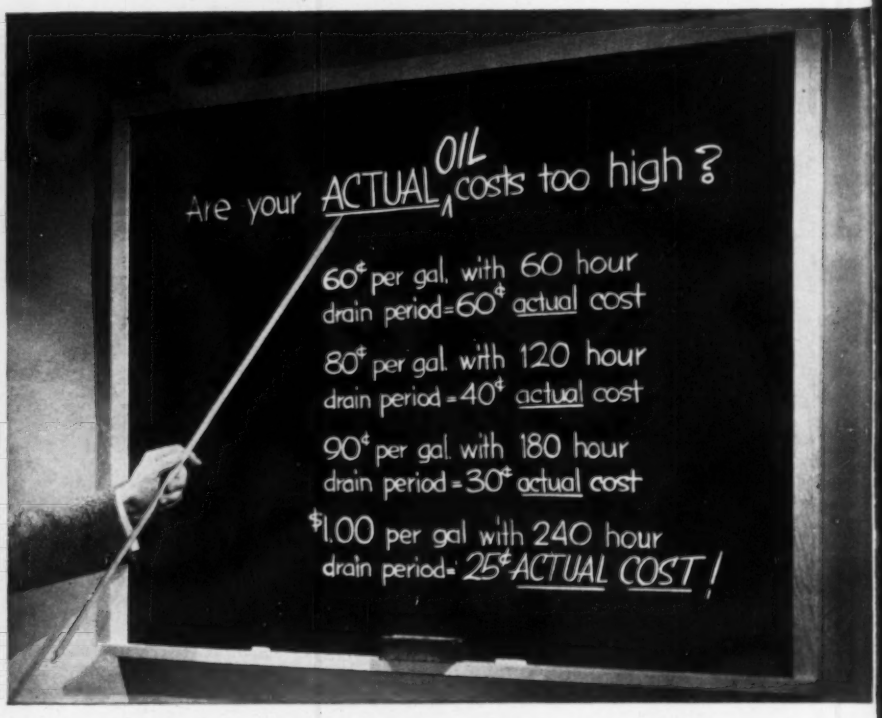
Are your ACTUAL OIL costs too high?
60¢ per gal. with 60 hour drain period = 60¢ actual cost
80¢ per gal. with 120 hour drain period = 40¢ actual cost
90¢ per gal. with 180 hour drain period = 30¢ actual cost
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With D-A "Extra-Treated" Diesel Oil you can extend your drain periods, often far beyond the limits which you are now forced to use. The oil in your equipment will do more for you . . . better . . . and for a longer period of time. By sending occasional drain samples to the laboratory, you can establish maximum safe drain periods for any conditions in which you are operating. Your lubrication is controlled to *your* requirements.

D-A "Extra-Treated" Diesel Oil Lubricates Your Engines Better for several reasons:

❶ D-A's natural viscosity index is far superior to most competitive oils. This means that D-A "Extra-Treated" Diesel Oil thins out less with increase in temperature, offers more protection to engines under all conditions of heat, yet lubricates cold engines properly.

❷ D-A uses superior additives, and more of them. Engines don't become "additive starved" with D-A "Extra-Treated" Diesel Oil.

Base oils seldom break down in service; more often, the additives are used up during operation. When they are gone, they can no longer help to protect an engine. D-A insures that the additives stay in the oil longer by using more and better additives to begin with. You extend your drain pe-

riods because you *know* that your oil is still able to protect your equipment.

❸ D-A oxidation inhibitors and detergent additives keep your engines cleaner. Varnish formation and sludge deposits are prevented by D-A's new types of high temperature anti-oxidants. Carbon and other inescapable products of diesel engine operation are held in suspension.

❹ D-A "Extra-Treated" Diesel Oil protects your engine from acid corrosion, one of the greatest known enemies of long engine life. Today approximately one-third of the diesel fuel oil manufactured contains more than .4% sulfur.

During combustion, sulfur is converted to sulfuric acid. When fuel oil contains .5% sulfur, acids are formed at the rate of approximately *one pound* for every sixteen gallons of fuel burned.

Extra amounts of D-A corrosion inhibitors assure maximum protection against excessive parts wear and possible engine failure. *D-A "Extra-Treated" Diesel Oil will neutralize the harmful effect of sulfur in fuel even when present in concentrations of up to 3%.*

Why you *must* have Laboratory Service to Extend Drain Periods

You can save time and money by using D-A "Extra-Treated" Diesel Oil and thereby greatly extending your drain periods. But you must *know* how far you may safely lengthen the drain interval! To do this, D-A's free laboratory analysis is at your service. This analysis is concerned principally with the following:

❶ **SULFUR CONTENT OF FUEL**
The more sulfur that exists in the fuel you are using, the sooner the alkaline reserve and detergent additives are depleted, because sulfur creates acids and hinders clean combustion. Therefore, it is essential to know just how much sulfur is present.

❷ **FUEL DILUTION**
Any oil will eventually become contaminated with raw fuel deposited in the crankcase during operation. When the amount of dilution becomes too great, excessive bearing wear and piston scuffing will result. *No oil* should be used after dilution approaches 15%.

❸ **MOISTURE**
Moisture in the oil, another inevitable by-product of combustion, destroys the oil's detergency reserve and lowers film strength. If moisture content is more than 2%, excessive wear or metal scoring will follow.

❹ **ACID BUILD-UP**
All *good* engine oils are alkaline when manufactured (some more so than others), but a continuous flow of combustion acids eventually neutralizes the alkalinity. When this happens THE OIL MUST BE DRAINED IMMEDIATELY, before combustion acids cause corrosion, excessive cylinder and ring wear.

❺ **FOREIGN CONTAMINANTS**
When sufficient abrasive material, such as dirt, dust or sand, has bypassed the oil cleaner and is flowing through the engine, excessive wear begins and must be stopped immediately, before expensive repairs are necessary.

When you buy D-A Diesel Oil, you buy controlled lubrication, designed specifically for *your* operation and taking into account all of your particular problems. Your drain periods will be extended to your maximum advantage: your equipment will be protected . . . you will get the utmost from your lubrication dollars . . . and this service will be yours FREE.

D-A controlled *safe* lubrication will bring you real savings

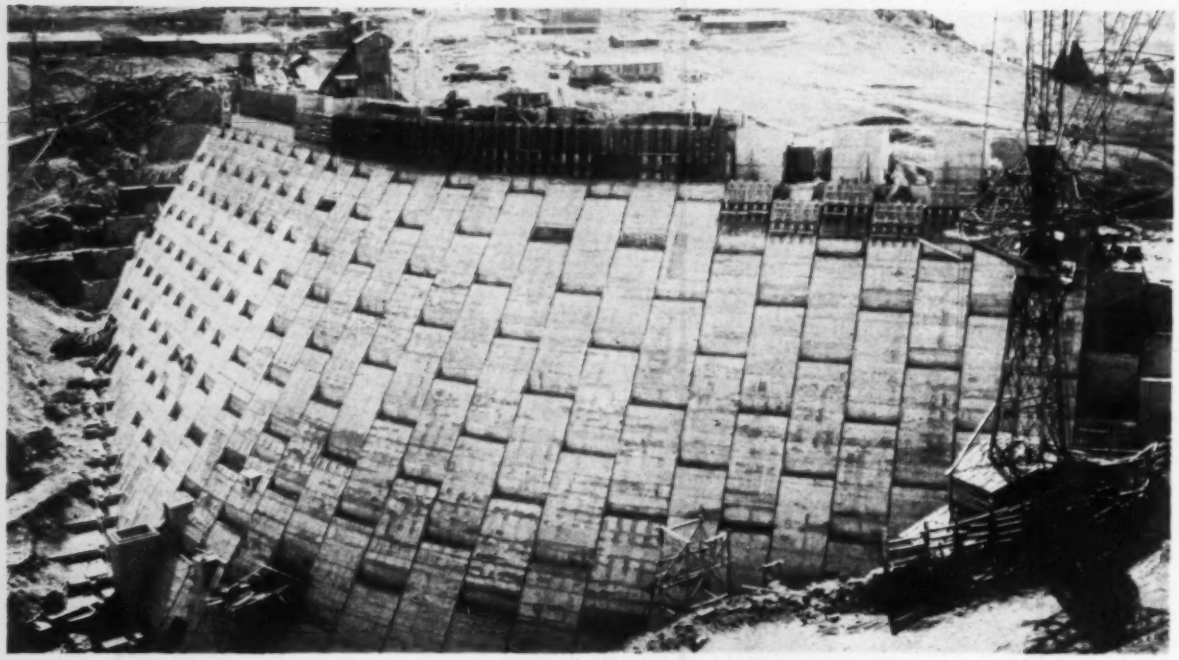
. . . SAVINGS OF 25% TO 50%. The best way to save money on oil is to buy the best oil—backed by complete laboratory analysis service. The most dangerous, most expensive thing you can do is to buy "any old oil" and to remain ignorant of what is happening inside your engine.

D-A will be glad to help you solve your lubrication problems and show you how you can get the best lubrication for the least cost.

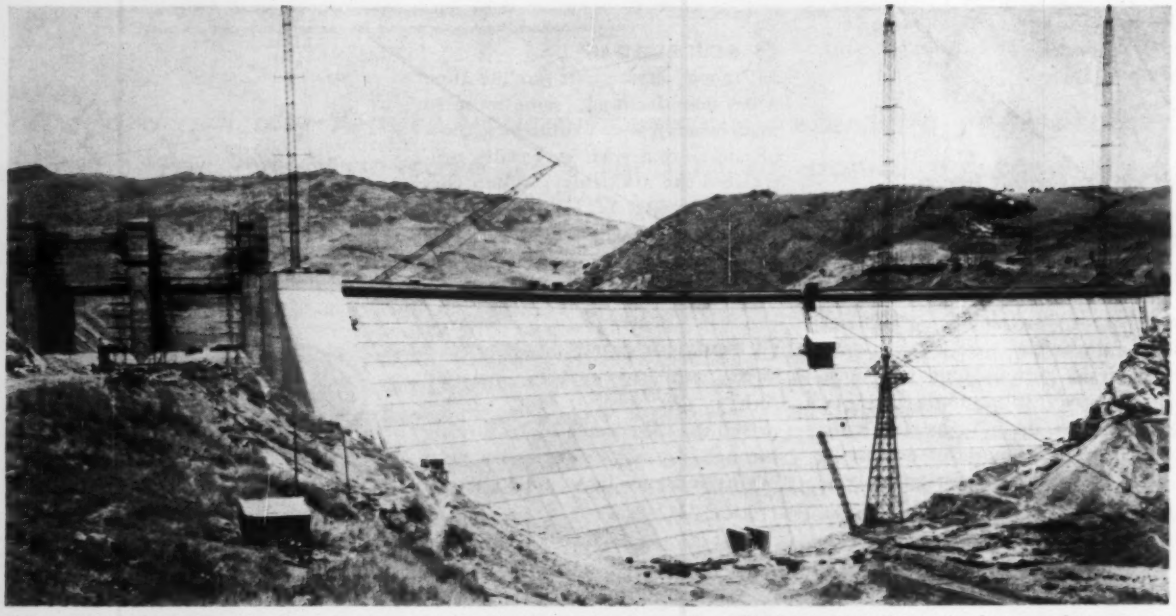
Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, IND.

Joints Let Dam Flex With Soil



DOWNSTREAM—Concrete blocks are placed in separate columns and staggered to avoid continuous horizontal planes. Joints are lubricated with pebbles, which will allow the dam to shift with soil movements.



UPSTREAM—Metal plates line the entire face rendering the dam impervious. The 15/64 in. thick plate extends to sandstone strata. Grout is pumped into the sandstone fissures.

Movements

Part of Sicily's new Salso River dam is on rock and the rest on clay. Differential settlement was therefore a foregone conclusion when engineers picked the site.

The upstream half of the 183 ft high, 770 ft long gravity dam rests on sandstone while the downstream portion sits on clay.

To permit deformation and adjustments to future settlements without altering the static efficiency of the structure, the dam is built of concrete blocks with pebble-lubricated joints.

Part of the arid island's land reclamation program, the dam is under construction at Pozzillo, above the Catania Plain. It's located a short distance upstream from the Salso's confluence with the Simeto and drains 225 sq mi. It can absorb the entire flood flow capacity of 70,600 cu ft per sec without overflowing, even when already impounding up to 48,000 acre-ft of water.

The reservoir will store 114,400 acre-ft total. The live storage capacity—about 92,800 acre-ft—will be used to irrigate 75,000 acres and provide protection against the unpredictable flash floods of the Simeto.

Most of the concrete monoliths are 13.12 ft cubes. Blocks on the downstream face are shaped to conform with the inclination of the face.

Horizontal joints between monoliths are staggered from one vertical row to the next to avoid continuous planes of separation.

The upstream face (108,000 sq ft) is made impervious with a shield of 15/64 in. metal plates, welded together and fastened directly to the blocks.

Located at the left side of the dam are two sluices, 29.53 x 44.29 ft, equipped with vertical gates. Flow capacity is 50,480 cfs. At the bottom of the dam are two outlet lines. The larger has a flow capacity of 7,695 cfs and the second is an auxiliary, with a flow capacity of 500 cfs.

The right side of the dam is completed by a concrete abutment, 487 ft long, 39½ ft high.

Financed by the Cassa per il Mezzogiorno, the dam is being built for the Ente per la Riforma Agraria in Sicily. Design engineer is Claudio Marcello and the contractor is Impresa Umberto Girola, of Rome.

(*International* continued page 35)

HOME BUILDERS' SEWAGE PUMPING GUIDE

5 pumping problems ... and the engineers' solutions

1 **PROBLEM:** A builder who was erecting 50 homes found that he could pump sewage to the municipal sewerage lines ... but that his pumping station probably would be abandoned in less than 5 years when the municipality built a larger station to serve his and anticipated adjacent developments.

SOLUTION: His consulting engineer drew up plans for a pumping station, employing a vertical enclosed shaft pump installed in a dry pit. Yeomans supplied the equipment in package form ... ready for installation in the concrete pit. When the station is abandoned, the pump can be removed and reinstalled elsewhere.

Complete pumping station cost **$125.00** per home.

2 **PROBLEM:** A land developer who was planning for 75 homes was told that he must put in a sewage pumping station to meet the codes of the adjoining village. Location of the station required that it take a minimum of space, be odor-free and clog-proof, and easy to install and maintain.

SOLUTION: The engineers designed a low-cost pumping station equipped with a Yeomans Pneumatic Ejector ... the "package" Expelsor®. This is a complete, factory-assembled and wired, self-contained unit, with built-in controls and ready-mounted air compressor. It's ready to set in place, connect, and put into operation.

The complete station cost **$120.00** per home.

3 **PROBLEM:** A builder of 150 homes in a nonseweraged area had no room for a sewage pumping station above ground. Moreover, because of ground conditions, an underground station with concrete walls was not practical. A second consideration was the cost of equipping and installing the station.

SOLUTION: His consulting engineer recommended the Yeomans all-steel, factory-assembled, underground station. Inside the watertight steel tank are two vertical centrifugal pumps, the pipes, the valves and controls, a dehumidifier, etc.—the completely equipped station. The contractor had only to lower and anchor it in the ground and make the connections.

Cost of complete station **$105.00** per home.

4 **PROBLEM:** A planned community of 1000 executive and professional men's houses was to have independent facilities except for water and sewerage ... civic center, fire and police protection, parks, etc. A permanent sewage pumping station was to be installed under the street approaching the shopping center. The location made it imperative that there be neither sanitary nuisances nor periodic maintenance.

SOLUTION: The engineers put a Shone® with mechanical controls in the concrete pit under the street ... but installed the air compressor powering the ejector in the nearby firehouse. To date, the ejector has required *no* maintenance. The electrically operated air compressor is easily accessible for lubrication and routine inspection above ground ... and gets preventive maintenance because of its location.

Cost of complete station **$30.00** per home.

5 **PROBLEM:** A subdivider was putting up 1500 new homes. Sewer lines for the entire development led to a central collecting well, and sewage was to be pumped from here into the metropolitan sanitary district system. The sewage lift station was disguised as a limestone gatehouse at the entrance to the golf course.

SOLUTION: The consulting engineer considered using Yeomans Vertical Dry Pit Pumps, but because there was ample space, recommended horizontal pumps for easier service. Both types of pumps have the large capacity required ... and the desired sustained efficiency.

Cost of complete station **$24.00** per home.

Yeomans has specialized in the design and manufacture of sewage pumps for 60 years. These cases have been selected from a wide range of pumping problems solved by Yeomans pumps. Yeomans welcomes the opportunity to work with your engineer in selecting the equipment which will give the greatest over-all economy in your case.

YEOMANS SINCE 1898

A complete line of centrifugal and pneumatic sewage pumps. Sewage treatment systems for 1 home or 10,000!

Please send information on a sewage pumping station for_____(number) homes to my engineer, who is

name_____

firm_____

address_____

city_____ zone____ state____

YEOMANS
1999-1 N. Ruby St., Melrose Park, Illinois

name_____

company_____

street_____

city_____ zone____ state____

Key to community prosperity—***a modern water system!***

Busy shoppers on Wichita's Broadway and Douglas Avenue

From WICHITA, KANSAS—Mayor James L. Gardner tells how good water contributes to business activity.

"Every year—we actively go after new business . . . seek new firms to locate in Wichita to create job and business opportunities for our citizens. These new firms need water—and never fail to ask about our water system . . . which is one of the most efficient systems anywhere in the world. Part of its efficiency is made possible by Johns-Manville Transite Pipe which we have been using for many years."

Now's the time to support your community water program and water department officials. Your prosperity, welfare, safety depend on good water . . . and plenty of it.

How Transite Pipe helps keep water costs low . . . employment high . . . business good!

Visit Wichita and you see an active city. A giant farm market . . . a world leader in the oil and meat packing industries . . . an area unsurpassed in aircraft manufacturing.

Throughout the city, homeowners and businessmen give many reasons for this prosperity. One important reason is the city's water system! One of the nation's most modern, it supplies Wichita with 30 million gallons of fresh, crystal-clear water every day.

Like so many leading communities, Wichita has been served for many years by Johns-Manville Transite Water Pipe.

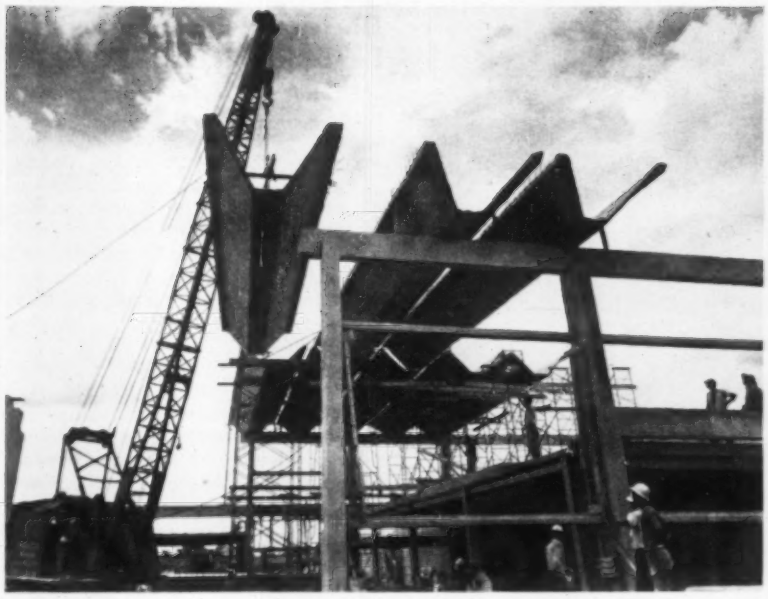
Made of asbestos-cement, Transite cannot rust . . . preserves water purity and clarity from treatment plant to home and industry. Transite also saves tax dollars for other uses. It is installed quickly, economically. Its smooth interior keeps pumping costs low. And it is noted for its unusually long life. The result is greater assurance of pure water . . . in full volume . . . at minimum cost to homeowner and business firm.

For information on how Transite Water Pipe (and Transite Sewer Pipe, too) can serve your city, write Johns-Manville, Dept. EN, Box 14, New York 16, N. Y.

JOHNS-MANVILLE

100 YEARS OF QUALITY PRODUCTS . . . 1858—1958

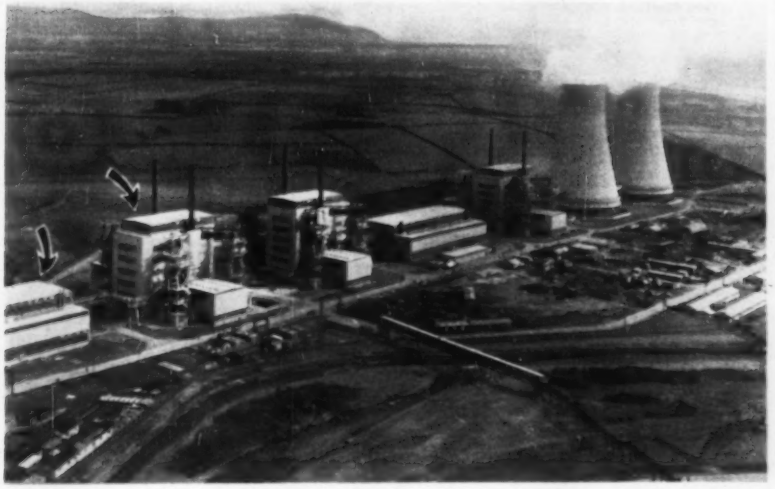
JOHNS-MANVILLE JM PRODUCTS



Folded-Plate Roof Spans 80 Ft

Precast, folded-plate concrete sections, 3½ inches thick, form an 80x343 ft roof over duPont's new paint plant near Havana. Although the thin-shell roof spans 80 ft between concrete bents along the outer wall, the roof's V-shaped units were precast in 40 ft lengths. During erection, these units rested on temporary scaffolding at the building center line. After the units were placed, the builders cast a concrete rib down the center forming one continuous joint.

Saenz-Cancio-Martin, Alvarez y Gutierrez are engineers for the project.



Calder Hall B Nears Completion

Construction should be finished sometime this fall on Calder Hall B, the two units at the left which are the second half of England's pioneer atomic power plant in northwest England (ENR Oct 25, 1956 p. 48). Calder A went critical two years ago this month, marking the start of a ten-year program in which the English government plans to build at least 12 nuclear power station.

(*International continued page 36*)

4-D

WROUGHT IRON IN WATER AND SEWAGE PLANTS stymies corrosion

WHERE TO USE IT:

- gas lines
- heat exchanger tubes
- digestor heating coils
- raw sewage lines
- sludge lines
- compressed air lines
- guard railings
- electrical conduit
- chlorine lines
- ammonia lines
- outfall lines
- boiler piping
- weir plates and baffle plates
- smokestacks
- sludge tanks
- manhole ladder steps
- storm sewer buckets
- soil, waste, vent and downspout lines
- hot and cold water piping

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

Put trench spoil off the road —the 80W will pull it back

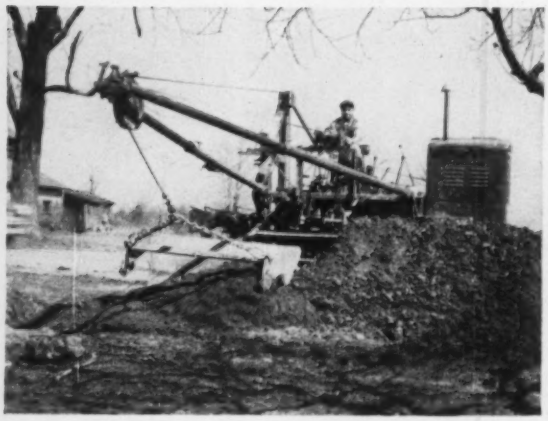
Keep traffic lanes clear, put your spoil off the pavement. The Cleveland 80W backfiller pulls spoil from opposite side of trench, backfills *toward* itself, works parallel to trench and to traffic.

As it backfills, the 80W simultaneously compacts fill, the right way, from the bottom up. Leaves no voids around pipe—no settling, now *or* later.

Result: a clean, safe, *completed* job.

The 80W backfills *away from* itself, too. Stays off lawns, sidewalks and completed work.

Fits *all* job conditions.



The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere ®

. . . International

Horizontal Drains Avert Landslides in Alberta

Canadian engineers claim to have found a new technique to combat the clay and shale slides that plague the Peace River district of northern Alberta.

Engineers of the Alberta Highway Department use a horizontal drilling method to stabilize potential slide areas. First, they drill vertical bore holes and conduct resistivity surveys to locate the water-bearing strata. From a chosen discharge point they drill sloping lateral holes. Then perforated steel casing is inserted to absorb seepage flow from these strata.

This method drains the underground water that apparently causes the recurring slides. The drainage lines, including horizontal drilling and casing, cost about $4.50 per lin ft.

Swiss Garage Parks Cars With Push-Button Control

An eight-story garage in Basel, Switzerland, contains 374 weather protected, air-conditioned stalls for storing automobiles. Parking is done automatically.

Separated from each other by concrete walls, the stalls open onto a 23 ft wide shaft, where three lift-towers move with elevators. The conveyor system picks up cars from entrance compartments at street level, places them in the stalls and later returns them to selected exit compartments. At the press of a button, the automatic mechanism can pick up a car at the entrance and park it in 30 seconds.

The garage was completed in 3½ years and cost about $3.9 million. Marcus Diener, of Basel, was the architect. The conveyor system was built by Mohr & Federhaff, Mannheim, Germany.

San Juan Builder to Start Work on $3 Million Hotel

A 176 room hotel, estimated to cost about $3 million, will soon go up on the site of the old Union Club in San Juan, Puerto Rico, according to Miramar Hotel Corp., the owners. The corporation, headed by contractor J. J. Otero, plans to construct the hotel with a 120 car underground garage, swimming pool and roof supper club. All rooms will have an ocean view.

Mr. Otero says the Hotel Corporation of America has contracted to operate the hotel. Tentative inauguration date in Dec. 1, 1959. Angel Aviles of San Juan, is the architect. Mr. Otero is with the Home Builders Corp., Santurce, P.R. No subcontract bids have been made yet.

Why SHOULDN'T I be interested in business life insurance?

"Our future depends on the future of my husband's business."

Every businessman — owner, partner, stockholder — has a vital stake in the future of his business . . . and his family may face real hardship *unless* he has prevented possible financial disaster through sound business planning.

One of the greatest hazards can be death of an owner of the business. Ætna Life's Business Planning Service can be instrumental in protecting your family's future security when this happens.

Thoroughly trained representatives in 91 agencies from coast to coast offer you and your attorneys this essential planning service.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

- To preserve **PARTNERSHIP** value when death comes to any partner.
- To preserve **SOLE PROPRIETORSHIPS** for heirs or selected employees.
- To preserve ownership values when death comes to any stockholder in a **CLOSE CORPORATION.**
- To indemnify any firm for the death of a **KEY MAN.**

Add Life to your Business with Ætna Business Life Insurance

ÆTNA LIFE
INSURANCE COMPANY

Affiliates:
ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.

Ætna Life Insurance Company
Hartford 15, Connecticut

Gentlemen:
Please send me a copy of your new business life insurance booklet "Will This Man Take Your Business With Him When He Dies?"

Name_____

Address_____

_____

"USING FORD HEAVIES HAS MADE A BIG CUT IN OUR MAINTENANCE COSTS"

says Allen Grosse
Fleet Supervisor
Green Bay Box Company

Handling heavy loads with ease, this Ford C-1000 used by the Green Bay Paper and Pulp Company (an affiliate of the Green Bay Box Co.) grosses 60,000 lb. It is equipped with 260-hp 477-cu. in. Super Duty V-8, Extra Heavy Duty 5-Speed transmission and 6.50 to 1 rear axle ratio.

GO FORD-WARD for Savings, Style and Stamina!

Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wide choice of transmissions.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

Higher payloads and longer life with new, higher-capacity front and rear axle options.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina. See your Ford Dealer today!

"Our records show that our average monthly parts cost, including major overhauls, has been reduced over 24%.

"Our Fords have given us less trouble than any other make of truck we've owned! Also, our Ford Dealer has always given us immediate and very good service. We've never had any downtime waiting for parts. They're always available at our Ford Dealer's, so we don't have the problem or expense of carrying a big parts inventory.

"Our drivers sure like the 'hillability' of the big Ford Tilts with their Super Duty V-8 engines! They say the 'Big V' has sure got it for power that seems to level out the steepest hills. And the Tilt Cabs are tops for maneuverability and riding ease.

"Performance plus economy . . . that's why we're sold on Ford trucks. We started using Fords when we opened our trucking department in 1954, and today 28 of our 35 trucks are Fords."

New Styleside pickups! Notice the handsome new grille, dual headlights, stronger wrap-around bumper. 6½-, 8- and 9-ft. boxes available in Styleside or Flareside models. Short Stroke Six or V-8 engines.

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

Curtained with an acre of glass...this Chicago building is 100% reinforced concrete!

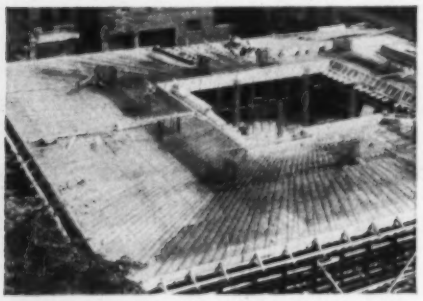
WHEN AMERICA BUILDS FOR DURABILITY . . . IT BUILDS WITH CONCRETE

It's one of Chicago's finest luxury apartment buildings, 21 stories overlooking Lake Michigan at 320 Oakdale. Beneath its attractive exterior, 12,000 cu. yds. of concrete form a frame and floor skeleton of outstanding strength.

Architect Milton M. Schwartz of Chicago and structural engineers from Miller Engineering Co. chose reinforced concrete for its rigidity and durability—and passed along big bonuses in economy to their client, too.

Concrete saved an estimated $200,000 through reduced materials cost, easier construction scheduling. It made a simple job of the cantilevered overhangs. And because floors are flat slabs, it saved a full story in total height.

Concrete needs no special fireproofing. It can't rust or rot. No other material offers such low maintenance cost. More and more architects and engineers are specifying concrete frame and floor construction today. They're finding the same kind of economies for all structures, of both conventional and modern design.

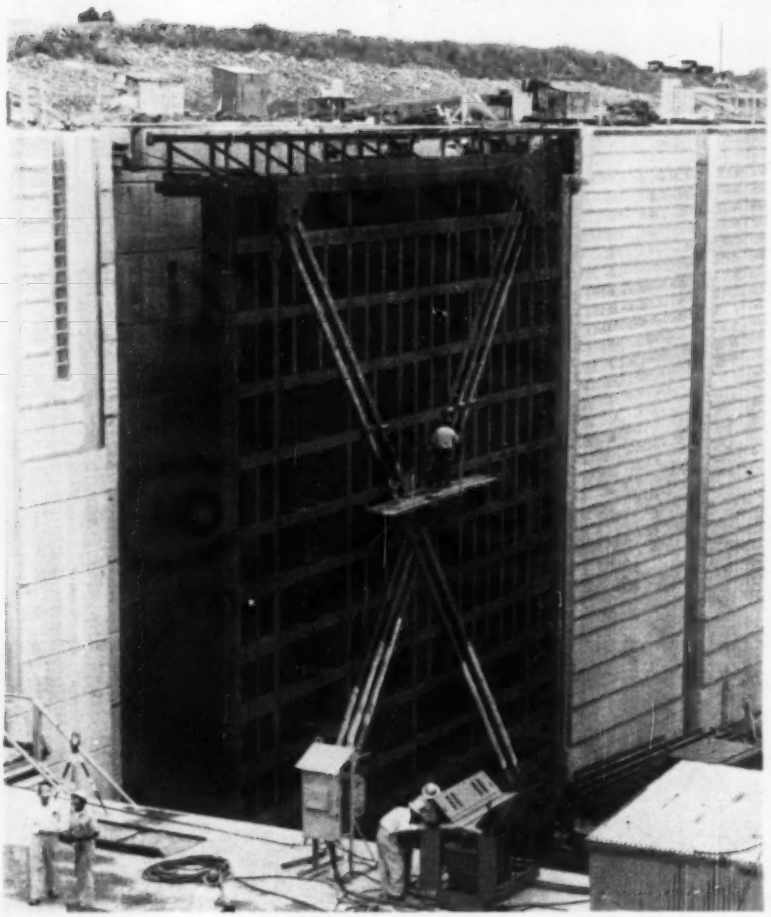


Reinforcement being placed for large, cantilevered 2nd-floor slab, a construction so easily achieved in reinforced concrete.

FOR STRUCTURES...
MODERN
concrete

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete



Heat Stressing Speeds Lock Job

Expanding diagonal tension bars by heating made it a lot easier to get the gate leaves at the new Markland Locks on the Ohio River into plumb.

Penn-Southern Construction Co., Pittsburgh, Pa. prestressed the 32 ft long steel diagonals by first heating the bars, tightening the turnbuckles, and then letting the bars cool and contract.

The lock gates consist of two leaves, each weighing 250 tons. The leaves are all-welded construction kept in plumb by diagonal tension bars. Three bars run down from the hinged edge to the swinging edge and two diagonals cross the other way.

Coils of #2 copper wire were wrapped around each of the 1½ x 8 in. section bars below the turnbuckles to heat up the diagonals. One thickness of asbestos paper was first wrapped about the bars for protection. As the bars expanded, the turnbuckles were turned a predetermined number of times to induce a tensile stress of 18,000 to 20,000 psi when the bars cooled and contracted.

Hobart Bros., Troy, Ohio, tested and calibrated the bars prior to installation to determine the required number of turns of the turnbuckle. A half hour was required to expand the bars ⅝ in.

U. S. Steel Fights Rust With Infrared Heating

Infrared heaters fight rust by keeping the humidity down in U. S. Steel Supply Division's Portland, Ore., warehouse.

A series of 68 heaters operate year-around, turning on and off automatically. The system remains on until the steel temperature is 12 F above the dew point.

(*Field and Office continued p. 42*)

4-D

WROUGHT IRON IN RAILROAD APPLICATIONS spikes corrosion and fatigue stresses

WHERE TO USE IT:

- freight classification yard piping
- air lines
- diesel facility piping
- diesel after-cooler piping
- building piping
- radiant heating systems
- snow melting systems
- car and switch de-icers
- electrical conduit
- signal and bridge warning masts
- sprinkler piping
- bridge deck plates
- ballast plates
- bridge pier protection plates
- fire curtains
- bridge railings
- transfer bridge pontoons
- bridge tie spacers
- tunnel drains

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

4-D

WROUGHT IRON
IN BUILDING PIPING
provides lowest cost
per year of service

WHERE TO USE IT:

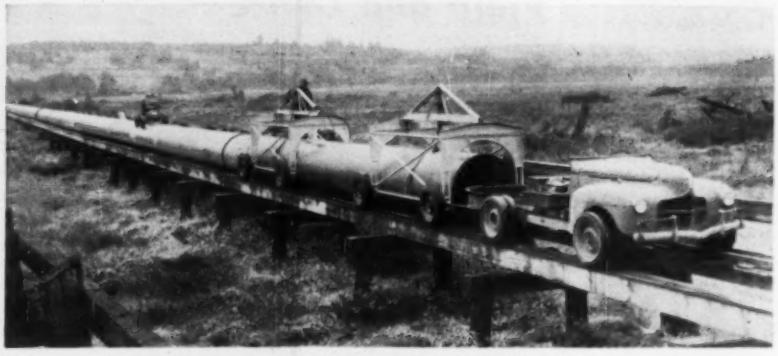
- soil lines
- waste lines
- vent piping
- downspouts
- steam supply lines
- steam condensate returns
- electrical conduit
- hot and cold water lines
- underground lines
- cooling tower piping
- radiant heating systems
- snow melting systems
- sprinkler systems
- air conditioning systems
- refrigeration

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

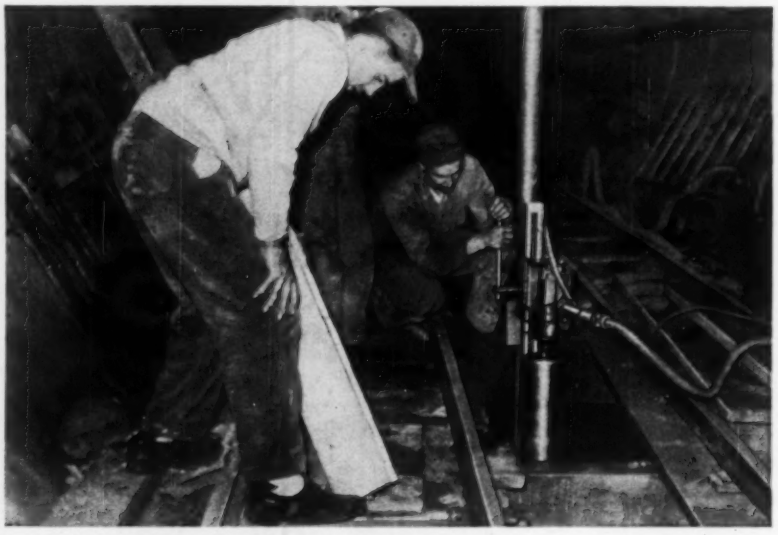


Staging Makes Pipe Placer

A $2,200 "train" was used to lay 48 in. pipe along a 9,300 ft long trestle for a new Everett, Wash., water supply line.

Each length of pipe was carried by two sections of Safeway staging mounted on automobile wheels. The trailer units formed inverted U's. A sling around the pipe was fastened to ridge poles of the trailers. The rig was pushed into place by a stripped-down truck whose wheels were centered by guide rails on the trestle's 4 x 12's. Pipe was stockpiled at two points along the trestle and rolled on as needed.

The cost-saving setup was used by Alton V. Phillips Co., Seattle. It held a $181,742 contract for the job.



Pipe Lengthens Core Drill's Reach

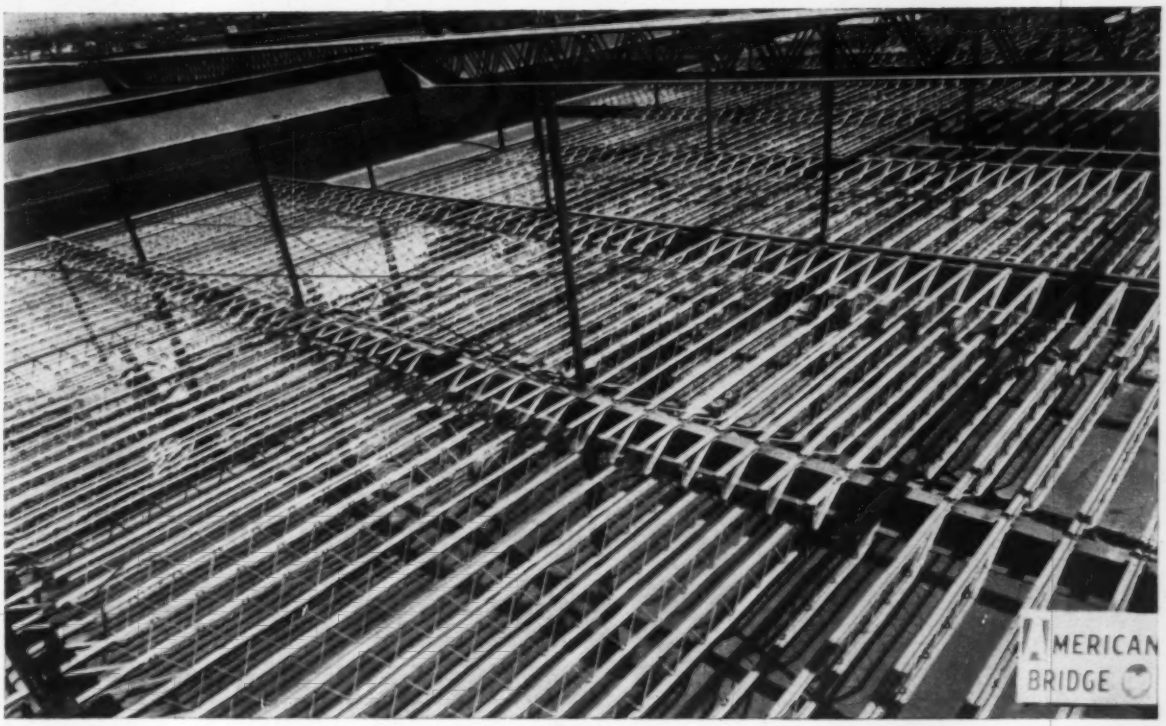
Fattore & Garavaglia Co., Detroit sewer contractors, rigged a standard concrete core sampler for a special job by improvising a substitute mount for the machine.

Samples had to be taken from inside a concrete sewer. But the size of the sewer created a problem. Its diameter ranged from 11 to 15 ft, beyond maximum reach of the telescoping column of the contractor's portable diamond drilling machine.

To meet the situation, the contractor took the coring apparatus off its column and mounted it on a 4 in. diameter sectional pipe. He got sufficient rigidity and leverage for drilling by bracing the pipe against the sewer walls.

Cores were taken at various angles without difficulty, according to the contractor. And the light set-up was easy to move along the length of the sewer.

Forty-four cores 6 in. in diameter and 24 to 30 in. long were obtained at a drilling rate better than 1 in. per minute, the contractor reports.



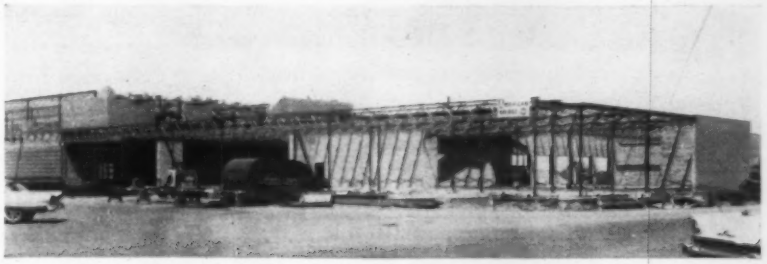
In one of Montgomery Ward's newest stores

USS AmBridge steel joists permit post-free floors

This two-story building, an addition to the Village Shopping Center in Gary, Indiana, will soon house Montgomery Ward & Company's newest store. The store will provide 122,965 square feet of merchandising space and will employ 250 people. **The builders of this store,** the Superior Construction Company, of Gary, are using 240 tons of USS AmBridge Longspan Steel Joists and USS AmBridge Standard Steel Joists for floor and roof construction. Longspan Joists permit post-free floors... allow the maximum in open-floor area for sales displays.

USS AmBridge Standard Steel Joists provide rigid, lightweight, economical construction, suitable for any type of floor, roof, or ceiling. Their underslung, open-web design allows free passage of pipes, ducts, and conduits in any direction. The ease of handling these joists cuts installation time and permits other trades to start work quickly. American Bridge also supplied the structural steel for this job.

FREE BOOK—To get full details on all USS AmBridge Steel Joists, send for our free catalog. This 40-page catalog contains complete design information for spans up to 120 feet. Write to American Bridge Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh, Pa. Or contact our nearest contracting office.



Montgomery Ward Retail Store, Gary, Indiana; Owner: Village Shopping Center, Inc.; Designer: Frederic W. Collins, A.I.A.

USS and AmBridge are registered trademarks

American Bridge Division of USS United States Steel

STEEL JOIST INSTITUTE MEMBER

General Offices: 525 William Penn Place, Pittsburgh, Pa. Contracting Offices in: Ambridge • Atlanta • Baltimore • Birmingham • Boston • Chicago • Cincinnati Cleveland • Dallas • Denver • Detroit • Elmira • Gary • Houston • Los Angeles • Memphis • Minneapolis • New York • Orange, Texas • Philadelphia Pittsburgh • Portland, Ore. • Roanoke • St. Louis • San Francisco • Trenton • United States Steel Export Company, New York

"Hothouse" of VISQUEEN Trade Mark film makes Bridge grow fast in freezing cold, high winds

PROBLEM

Local ground contours threatened washout of the bypass. Freezing, mid-January cold swept in from Lake Michigan over the project site. Severe February storms were to come.

SOLUTION

Contractor L. G. Arnold, Inc., Eau Claire, Wisconsin, beat the weather, sped pouring of footings and piers, as well as curing of slabs for the two-lane bridge, with a heat-retaining enclosure of VISQUEEN film which framed the entire substructure form work.

Though outside temperatures ranged from freezing to sub-freezing, workmen operated at maximum efficiency and productivity in the comfort of the 20 to 30 degrees higher temperatures inside the VISQUEEN film enclosure.

The VISQUEEN film admitted adequate natural light. High wind velocities failed to tear the strong, light VISQUEEN film.

.....

VISQUEEN film is specially formulated and manufactured for construction applications. *Seamless* widths through 32 feet, and the superior uniformity of thickness, make VISQUEEN film stronger, yet more economical than any other polyethylene for construction enclosures and concrete curing. Low first cost—and the superior quality that permits many re-uses, cuts costs. [4]

.....

WRITE NOW TO THE PIONEER MANUFACTURER OF CONSTRUCTION POLYETHYLENE OR USE THE INFORMATION REQUEST TAG BELOW.

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VISQUEEN *film—first and foremost polyethylene film. A product of the long experience and outstanding research of*
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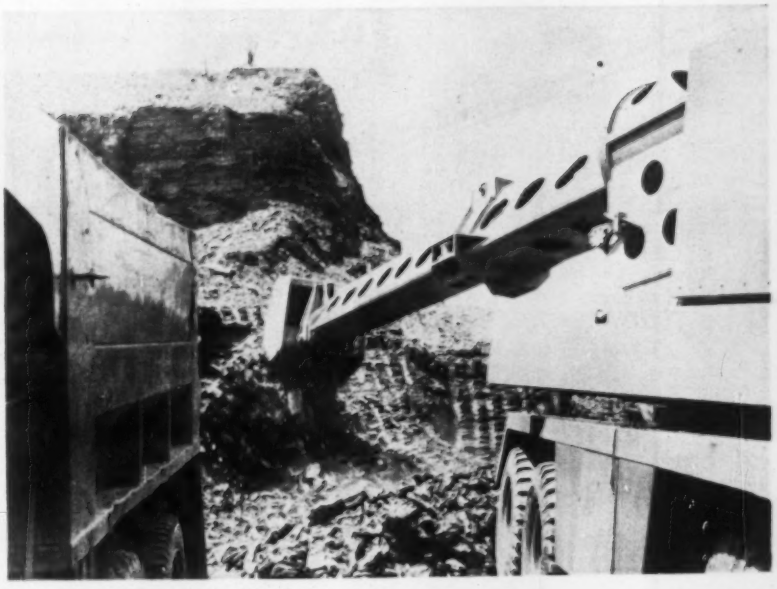
The G-100 digs to 23 ft . . .



. . . reaches out 47 ft . . .

. . . swings 360 deg . . .

. . . has full-vision cab

The New Gradall Is a Big One

Warner & Swasey's recently unveiled Gradall can reach out 47 ft, dig down to 23 ft, exert a pull of 23,500 lb and lift 14,000 lb. It is called the world's largest all-hydraulic digging machine. The 1¼ yd earthmover is expected to take on a still wider variety of jobs than the smaller Gradall's field of grading, sloping, ditching, small excavating and road and highway work.

The versatile machine has been completely re-engineered and retooled, says the manufacturer. It now falls in the $45,000 price range. Labeled the Model G-100, it can be mounted on either an eight-wheel, rubber-tired carrier or on crawlers.

Standard digging depth is 17 ft and standard reach is 31 ft. Boom extensions increase these to the higher figures. Two 100 hp engines supply hydraulic power for digging.

The machine has a 360 deg swing. Two hydraulic motors supply two swing speeds whose shift is automatic and dependent on the weight of the load. The G-100 has a boom tilt (rotation on the boom's long axis) of 120 deg. A 360 deg tilt is optional.

The new Gradall is speedily interchangeable from rubber-tired carrier to crawler. Its 8 x 4 carrier is designed and built by a division of Warner &

On-the-job trouble shooter. A Liberty engineer follows through on all phases of your job, checking for accident hazards and offering technical assistance where desired. This service has helped policyholders gain dramatic results in reduced compensation costs. Case in point: The Southern Construction Company, a bridge-building firm, has lowered its rates 59% since coming to Liberty Mutual four years ago.

New ways Liberty Mutual provides

Protection in depth

- **to safeguard your people**
- **to cut workmen's compensation insurance costs**

In the long run, the best way for a contractor to cut the cost of his compensation insurance is to cut down on accidents and losses. At Liberty Mutual, we can help you by making available an unusually broad range of skills and resources.

This is Liberty's protection in depth. It includes a full-time staff of construction engineers... two rehabilitation centers for seriously injured workers... a staff of claimsmen working out of 102 Liberty offices. These and all the other services of Liberty's protection in depth work to help you avoid accidents on your jobs and to lessen their cost impact if they happen.

Over the years, protection in depth has helped Liberty Mutual become the company with the largest experience in workmen's compensation insurance. Thousands of policyholders have saved through experience modification and the more than $455 million we have returned in dividends. Let us show you how protection in depth can now help you.

Rebuilding injured men through prosthetics, therapy and counseling is the function of Liberty's two rehabilitation centers. Types of injuries treated here include amputations, bad fractures, joint damage, back injuries and torn muscles. The goal: to help workers return to work.

Accident victim gets quick help. Liberty's claimsmen can act fast when accidents strike because they're already familiar with the problems on construction jobs they're assigned to. They work closely with supervisory personnel, assist in developing accident-reporting methods beforehand. This rapid, thorough claims service has helped hundreds of construction policyholders reduce compensation costs.

Look for more from

LIBERTY MUTUAL

...the company that stands by you

LIBERTY MUTUAL INSURANCE COMPANY · LIBERTY MUTUAL FIRE INSURANCE COMPANY · Home Office: Boston
Types of insurance: Automobile, Liability, Group Accident and Health, Fire, Workmen's Compensation, Marine, Crime, Homeowners' Policies.

EXPRESS PAVER resurfacing 15 miles of U. S. Highway 70 south of Huntington, Tennessee. Warren Brothers also used Blaw-Knox Wideners on their portion of the $1,200,000 contract. Express Paver is laying upwards of 1,000 tons per day in a 1½ inch layer. Job Superintendent Bragg is shown at left and General Superintendent Duckworth at right.

"We're 50% ahead of schedule because of the speed of this Blaw-Knox Express Paver"

"Despite the difficulty of this particular mix, our Blaw-Knox unit is laying up to 142½ tons per hour. Although we've had weeks of bad weather, we're 50% ahead of schedule on the maximum 250-day contract time," says R. F. Bragg, Job Superintendent on the Warren Brothers project.

"The quality of roadway is superior to that layed by crawler-mounted equipment. And the Blaw-Knox longer wheelbase reduces waves in the pavement that are sometimes felt when driving over asphalt roads laid by shorter wheelbase pavers. Rubber tires make it possible for us to work faster in completing the major moves that the machine makes, and it paves up to 20% more in the same amount of time," adds Ray Duckworth, General Superintendent.

Here is another instance of proved advantages —faster, better quality paving with freedom of movement—that contractors everywhere are experiencing with the new Blaw-Knox Express Paver. See your nearest Blaw-Knox Distributor for a technical report on this project, or write direct. There's no obligation, of course.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment
300 Sixth Avenue
Pittsburgh 22, Pennsylvania

Swasey. Torque converter drive and power steering are standard equipment.

The crawler is fully hydraulic. Two motors for each track provide a total of 120 hp. Each track has an automatic safety brake. Bearing pressure for the crawler on 30 in. tracks is 7 psi. The crawler mount allows a standard digging depth of 18 ft.

Safety plate glass encloses the operator's full-vision cab. Finger-tip hydraulic controls are grouped.

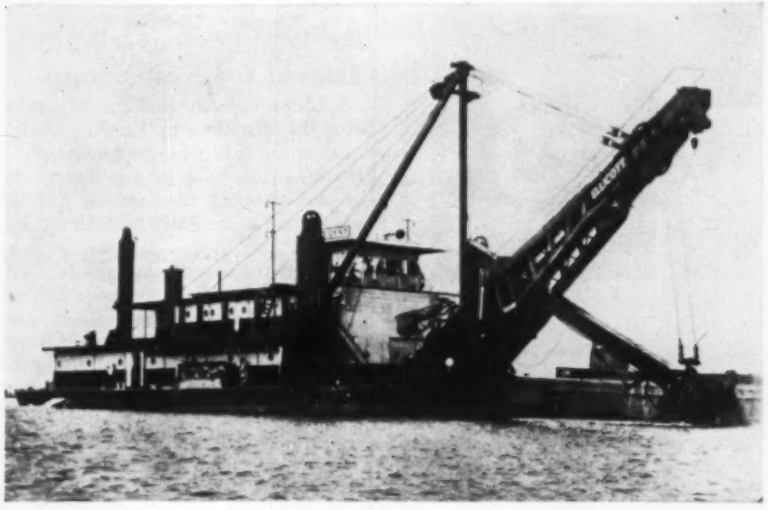
The G-100 has a quick-change bucket arrangement that enables the operator to switch attachments in short time. Attachments include a 48 in. wide excavating bucket, 10 ft wide clear span bucket for ditch cleaning, 10 ft wide bucket blade, pavement removal bucket, ripper tooth and two push-type buckets of 1¼ and 2½ yd capacity. WARNER & SWASEY CO., 5701 CARNEGIE AVE., CLEVELAND, OHIO.

Excavator-Crane on Rubber Travels Freely on Highway

On rubber, the Type M excavator-crane has a 20 ton lifting capacity and is available with a heavy or light truck mounting. Low axle load distribution is said to allow highway travel without a permit in most states.

On crawlers, the rig is rated as a 15 ton crane or ¾ yd excavator. Standard 12 ft 6 in. crawlers can be equipped with 24 or 30 in. shoes. Crawlers have self-cleaning treads and tumblers, double faced crawler rollers and heat-treated shoes.

Upper works features include machinery deck and side-stands constructed as a one-piece weldment. Turntable is 63 in. in diameter and has a heat-treated roller path and internal bullgear. INSLEY MANUFACTURING CORP., P. O. BOX 167, INDIANAPOLIS 6, IND.



First New Dipper Dredge in 25 Years

A new dipper dredge constructed for the American Dredging Co., Philadelphia, is the first completely new dredge of its type to be built since the 1930's, according to the manufacturer.

Mounted on a 112 x 48 ft hull, the unit can dig to a depth of 47 ft with its 6 cu yd bucket. Normal reach is 58½ ft. Bottom of the open dipper door can clear water level by 16½ ft. Boom is 60 ft long.

The floating excavator is equipped with three spuds—two forward for anchoring and one aft for trailing. All three are operated by single-drum winches.

Controls are mounted on an operating console. The console is track-mounted so that the operator and the controls can be moved from side to side for good visibility at all times. ELLICOTT MACHINE CO., 1611 BUSH ST., BALTIMORE, MD.

Mixers Designed to Halt Theft and Frozen Hinges

Essick Manufacturing Co. has reduced two nuisances that contractors find in concrete and plaster mixers—theft and frozen hinges.

To combat theft, all mixers, 5 cu ft and larger, come equipped with wheel slots through which a chain may be

4-D

WROUGHT IRON CONDUIT delivers low-cost uninterrupted service

WHERE TO USE IT:

- direct burial in earth
- burial in concrete
- submarine cables
- offshore platforms
- bridge structures
- industrial plants

HERE'S WHY:

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- no internal flaking or clogging
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- easy fabrication
- UL approved
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- black or hot dip galvanized finish
- all pipe sizes available
- long random lengths available
- fewer joints necessary
- black or galvanized threads

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

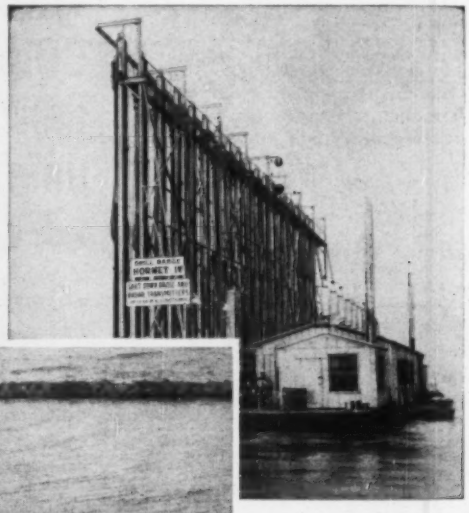
Tubular and Flat Rolled Products

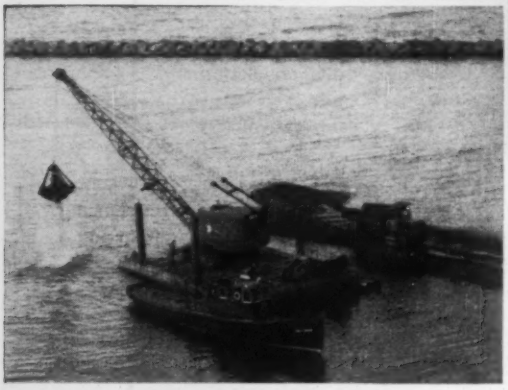
A. M. Byers Co., Pittsburgh 22, Pa.

MANITOWOC
SECTIONAL BARGES

- For floating all sizes of lift cranes, clams, draglines and other contractors' equipment.
- Easily assembled or knocked down for moving by rail or highway.
- Sections can be assembled into numerous barge sizes.
- Spuds, deck fittings, loading ramps and other accessories available.

Photo to the right illustrates the drill barge HORNET IV used in the Amherstburg Channel deepening project by contractors Marine Operators of Windsor. This 20 drill rig including compressors and diesels is mounted on a 160' x 30' sectional barge made up of 11 sections. 40 foot spuds are used to position the barge.





A clam operation off the rock bound shore of Lake Superior. The crane is mounted on a 4 section barge which was transported by highway to the site.

PORTA-FLOATS

• THE FLOAT WITH A 1000 USES •

The Manitowoc Porta-Float is the smaller version of the sectional barge. The standard basic float is 32' x 8' x 4'. Units can be pinned together to make a wide variety of sizes and arrangements. Economical and versatile for floating all types of contractors' equipment. Ideal for floating docks, piers, etc. Porta-Floats are easily transported on trucks as illustrated below.

PORTA-FLOATS & SECTIONAL BARGES *MANUFACTURED BY*

MANITOWOC SHIPBUILDING INC.

MANITOWOC, WISCONSIN

Please write for additional information and prices
Sold direct or through Manitowoc Engineering Corporation distributors.

passed to lock both wheels together. Also, removable draw bars allow the contractor to remove the tongue and keep it in the truck, thus eliminating the towing connection.

The problem of frozen hinges due to splashing and hardening of mortar is handled by reducing the exposed hinge surface to ¼ in. and completely enclosing the hinge rod. Essick Manufacturing Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.

Excellent Maneuverability Claimed for Rear Dump

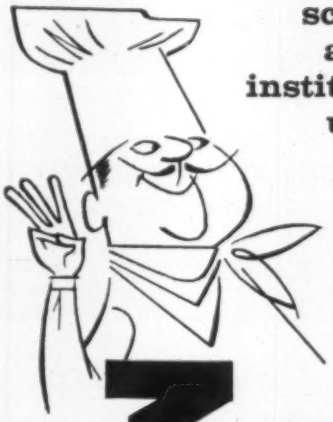
A 22-ton capacity rear dump is now being manufactured by Euclid. Designated as the S-12, the machine is powered by a 218 hp overhung diesel. It has a five speed transmission and is capable of traveling at 22.6 mph with a full load.

Exceptional maneuverability is claimed for the S-12. The machine has full hydraulic steering and can make a full turn in just slightly more than its own 28.66 ft length. In dumping position, the shortened wheel base permits turning in an area only 24 ft wide. The tractor is interchangeable with the Euclid S-12 scraper or the Easton Trailer, and this gives it a range for several types of work. Euclid Division, General Motors Corp., Cleveland 17, Ohio.

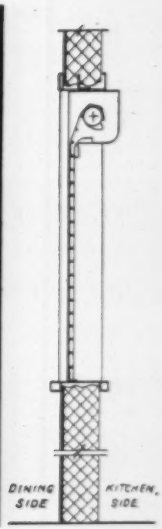
New Storage Batteries Promise Big Power Boost

A new line of high-capacity storage batteries promises an immediate boost in the power capabilities of any electric industrial truck. Four new models in the line pack up to 45% more power in a given battery container, the manufacturer states. Armored porous tubing, which allows faster flow of current, is responsible for the increased output.

The batteries are available in 106 sizes, with from 9 to 33 plates per cell. Capacities range from 136 to 1,800 ampere-hours at the six hour rate of discharge. Exide Industrial Div., The Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa.



for school and institutional use



PEELLE ROLLING ALUMINUM PASS WINDOW UNIT

Combined in the above completely assembled unit are a stainless steel frame, guides and a shutter of extruded aluminum flat-slats which rolls compactly into the head.

3 PEELLE PASS WINDOWS

...all with integral frames for easy installation

- **ARCHITECTS** specify Peelle Pass Windows to reduce specification and design time and to assure owner of a quality installation.
- **CONTRACTORS** like Peelle Pass Windows because they save estimating and buying time and eliminate duplication of installation—when frame is installed—panel is installed.
- **OWNERS** like Peelle Pass Windows because they give maintenance-free, EASY operation. Quality design and workmanship permit easy cleaning with no cracks and crevices to act as dirt catchers.

These desirable features account for the wide-spread use of Peelle Pass Windows in so many carefully planned school and institutional dining rooms and cafeterias. The three basic window designs shown at the right, allow great flexibility of choice in planning service access between kitchen and dining room.

Send for complete details on all 3 Peelle Pass Windows

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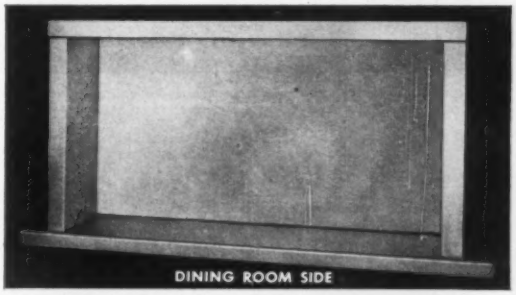
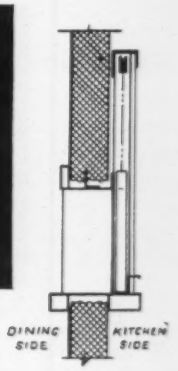
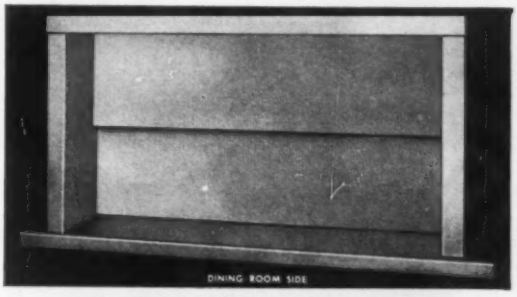
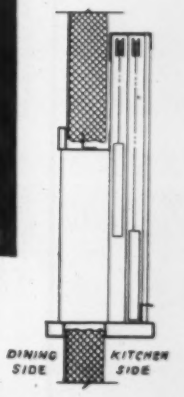




PEELLE ORIGINAL PASS WINDOW UNIT

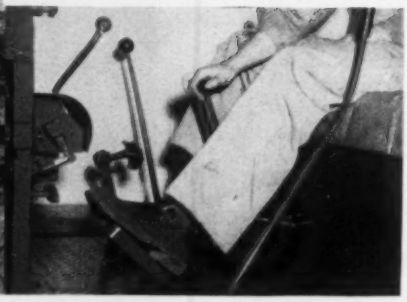
The above completely assembled unit consists of a hollow metal door with steel guides and frame, designed for quick, economical installation. Special extended sills furnished when specified.





PEELLE *TELCO* PASS WINDOW UNIT

The Telco pass window is designed for low overhead conditions. The two vertical rising panels are arranged so that both leaves arrive at fully open or closed position simultaneously.

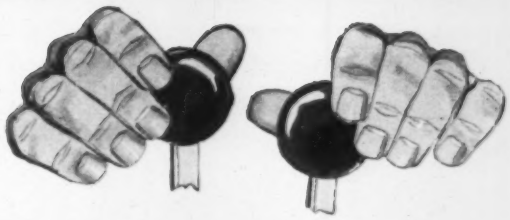


FEATHER-TOUCH CONTACT

As the TD-24 pusher approaches the Payscraper, operator slows tractor speed *with one hand* by power-shifting planetary system; and by depressing the foot decelerator. He gets feather-touch contact without declutching, brake-riding, or throttle change!

HIGHER REVERSE

Operator uses decelerator pedal to slow engine at end of pusher run, permitting faster reverse shifting. Fast reverse speeds, coupled with power-shifted planetary steering system, allows TD-24 operators to reposition pusher extra fast and reduce scraper pick-up time.

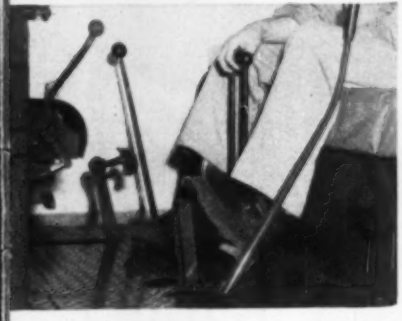


Your operators have fingertip control of greater push-loading profits because...

PLANET-POWERED "24's" beat other rigs on all four steps of the push cycle!

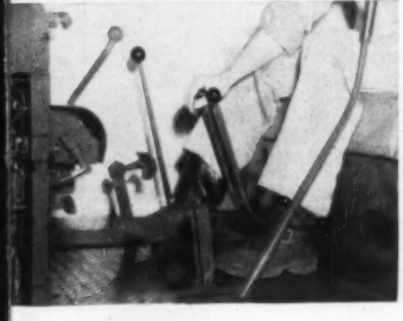
"CONSTANT CONTACT" LOADING

Releasing foot decelerator instantly applies full power, for efficient loading. Power-shifting either track into high range maintains solid pusher contact on curves—applies TD-24's full power, through both tracks!



GEAR HIGHER KICK-OUTS

Once scraper is fully loaded, the TD-24 *follows through* as operator power-shifts on-the-go with one hand to higher gear range, boosting speed of both units 27%. This allows most scrapers to come out of the cut a gear higher.



Your push-loading profits are in your operator's hands. And your operators know they can load out more scrapers every shift when their hands control the boss of the borrow pit—the International TD-24 crawler. The four-step pusher cycle (shown) pinpoints reasons why your operators and TD-24 pushers can increase production with easier control—from contact through kick-out.

Only the TD-24 gives you this big difference in pushers: more productive effort at the fingertip command of your operators! Exclusive Planet Power steering lets your operator: 1) keep pusher speed matched to that of the scraper; 2) power shift either or both tracks up or down a full speed range with a mere flick of the finger; and 3) apply full power to both tracks even if scraper cut is made on a curve.

And your TD-24 operators can fully utilize the decelerator pedal to cut maintenance costs three ways. The decelerator reduces engine clutching; eliminates brake pedal riding for steering; and permits feather-touch scraper contact without slam-bang jarring of operators and machines.

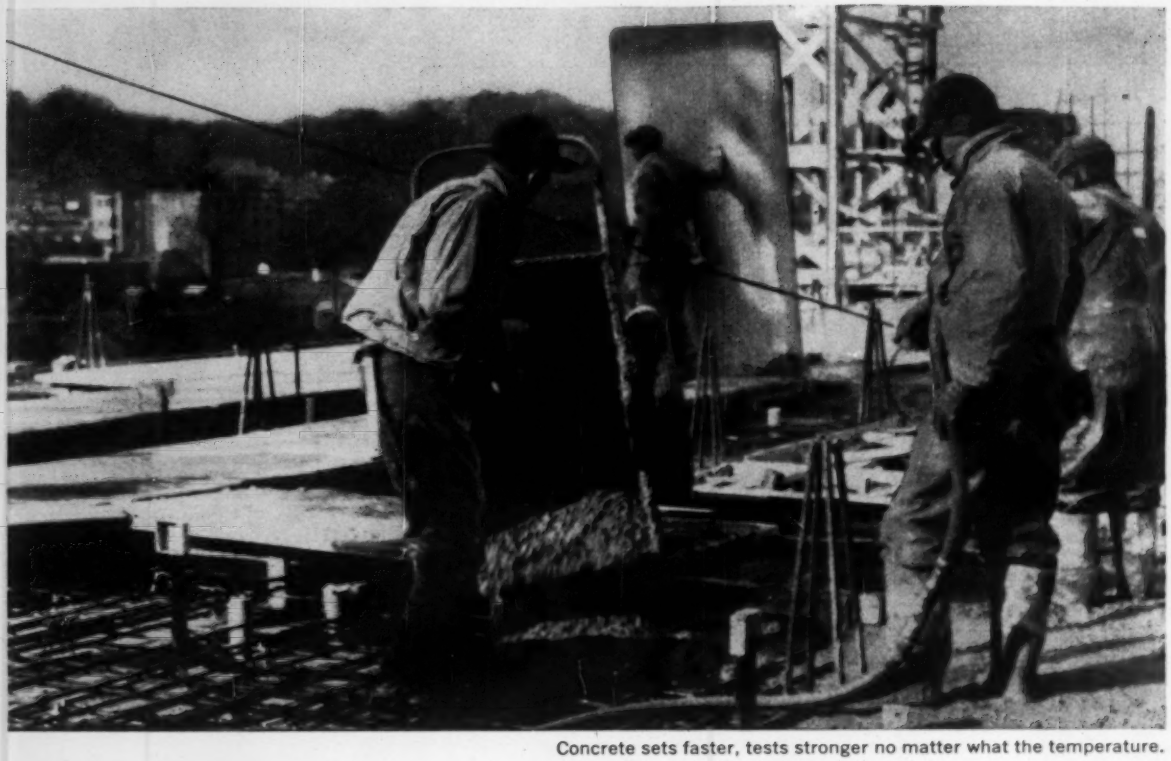
Get all of these TD-24 features that cut the cost of loading out paydirt, with either a Torque Converter or gear-drive tractor best suited to your needs.

If you're a dirtmover, get the TD-24 stay-on-the-job story by checking with any of the thousands of owners. Ask about the comparative life of such important components as track rollers and rails, engine, transmission, and planetary steering system. Get a TD-24 on your job today by calling your International Construction Equipment Distributor for a demonstration. Then you'll see how the TD-24 earned the right to be called "Boss of the Borrow Pit."

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.



Concrete sets faster, tests stronger no matter what the temperature.

COLUMBIA CALCIUM CHLORIDE

saves days on winter concrete set and strength times

Hot job schedules and winter weather used to make trouble: concrete trouble. Whenever the thermometer dipped, set times soared. Finishers and forms were tied up for days longer than planned.

This isn't as common a problem today. Matter of cost-record fact, it's no problem at all when your concrete contains Columbia Calcium Chloride. Below 70°F, concrete treated with calcium chloride reaches both initial and final set an average of *three times faster* than untreated mixes. At 40°F, both 3 and 7 day strengths are doubled when calcium chloride is used. This adds up to faster finishing, quicker form removal, earlier job wind-up for cost-conscious contractors.

The American Concrete Institute now recommends the addition of calcium chloride for cold weather concreting (ACI Standard "Recommended Practice for Winter Concreting"). All this evidence should suggest a check with your ready mix suppliers or a new look at your own batching procedures. If your files aren't up-to-date, a note to our Pittsburgh address or to any of the fourteen Columbia-Southern District Sales Offices will get you free copies of helpful booklets like *Better Concrete All Year Round* or *Columbia Calcium Chloride in Concrete.*

Finishing can be completed without costly overtime.

Columbia Calcium Chloride compacts unpaved surfaces for dust free detours.

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Men and Jobs

U. S. Experience Pays Off For New Zealand Engineer

Engineering experience with the U. S. Bureau of Reclamation and the Corps of Engineers helped put New Zealander John Wallace Ridley in an important spot back home. He has been named project engineer of the Benmore development, New Zealand's biggest hydroelectric job.

Mr. Ridley came to the U. S. in 1954 on a Commonwealth Fund Fellowship to study hydroelectric engineering—in particular, the design and construction of earthfill dams.

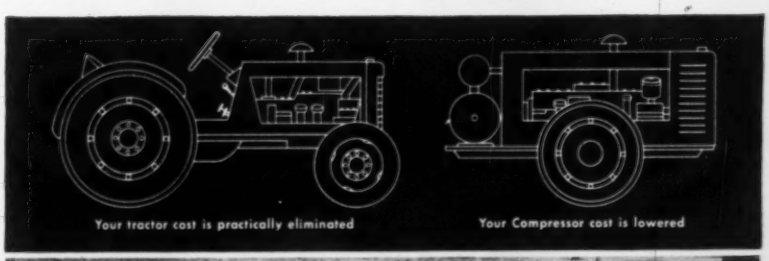
Already that year he had won the New Zealand Institution of Engineers' highest honor, the Fulton Gold Medal, for a technical paper on seepage and uplift pressures on hydraulic structures.

He worked in this country on the Bureau of Reclamation's Pactola and Palisades dams (South Dakota and Idaho, respectively) and the Corps of Engineers' Oahe Dam (Montana).

Clarence Ahlgren Heads New England Water Group

Clarence L. Ahlgren, assistant superintendent of the Manchester, N. H., waterworks, has been elected president of the 1,100 member New England Water Works Association.

Mr. Ahlgren started as an engineer in 1933. He received a commemorative award of the New England Water Works Association in 1949 for a report on the design of the diesel pumping



Why buy two machines when one does the job?

SCHRAMM PNEUMATRACTORS ARE BOTH AIR COMPRESSOR AND TRACTOR YET THEY COST MUCH LESS THAN BUYING TRACTOR AND COMPRESSOR

No need to buy both a tractor *and* an air compressor when one Schramm Pneumatractor does the job of both. You save on both equipment and manpower costs, and still have a more practical machine. The operator simply climbs into the seat and drives a complete 125 cfm compressed air plant from job to job. Pneumatractors go where ordinary towed portables can't.

Three types of Schramm Pneumatractors are now available . . .

Standard Pneumatractor—125 cfm compressor with tractor features. Used for lighter jobs, operates all types of construction tools including Pneumajack, sweeper, snow plow, post hole digger, winch, etc.

New Standard 250 Pneumatractor—250 cfm of air—a 40% bonus in power... operates more tools, more efficiently. Send for information on this new Schramm product.

Heavy Pneumatractor—125 cfm tractor-compressor mounted to rugged chassis. Available with front end loader and backhoe and a wide choice of other versatile attachments . . . plus the added convenience of air.

All models offer choice of gasoline or diesel power . . . are easily serviced by any engine service man. No special training needed. Send for complete information today. Mail the coupon below to Schramm, Inc., 620 North Garfield Ave., West Chester, Pa.

For maximum efficiency, every construction job needs at least one self-propelled air compressor!

See the Yellow Pages for local Sales, Service and Rental of Schramm Air Compressors.

Schramm, Inc.
MANUFACTURERS OF AIR COMPRESSORS
620 North Garfield Ave. • West Chester, Pa.

Please send me the following information at no obligation.

☐ Bulletin 5845, Schramm Standard Pneumatractors

☐ Form TFP-57, Schramm 250 Standard Pneumatractors

☐ Bulletin 5740, Schramm Heavy Pneumatractors

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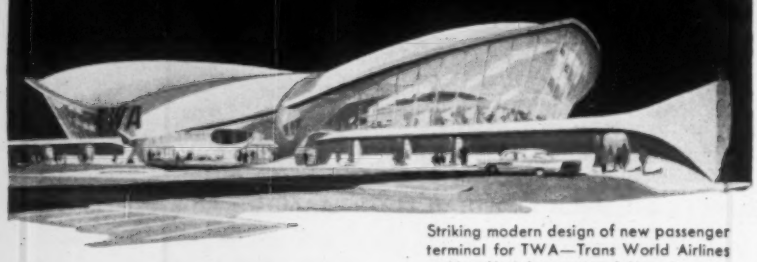
MODERN VENTURES!



Striking modern design of new passenger terminal for TWA—Trans World Airlines at New York International Airport.

Contractors expect their bonds and bonding service to keep pace with modern projects they cover.

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Decades of broad experience and specialized know-how in all phases of construction bonding is readily available to you through THE FIDELITY AND CASUALTY COMPANY agents. You will find one nearby to serve you.

The Fidelity and Casualty Company of New York

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plant at the Lake Massabesic high pressure station. He has served on various NEWWA committees and, for the past two years, as the association's vice president. He was president of the New Hampshire Water Works Association in 1952.

Careers

Business

M. J. Sienerth has opened a consulting structural engineering office at Scottsdale, Arizona.

Howell D. Humphries, former president of Concrete Builders, Inc., Atlanta, has been appointed vice president of the building division of Dunn Construction Co., Birmingham, Ala.

Daniel L. Ziegler has been appointed assistant to the vice president-operations, at the Alpha Portland Cement Co., Easton, Pa. As a former project manager, he supervised construction and improvement of many of the company's plants.

Whitney C. Huntington, professor emeritus of civil engineering at the University of Illinois and retired head of the department, now is a consultant for Harland Bartholomew & Associates, city planners and traffic engineers, St. Louis, Mo. His new work will include planning improvement programs for universities and other large institutions.

H. Morgan Noble has opened a consulting engineering office, Noble Harbor Engineering, in Newport Beach, Calif., specializing in small craft harbors. He was harbor engineer 12 years for Orange County, Calif.

H. F. Zimmerman, J. J. Evans and **J. H. Leopold** have formed a consulting engineering partnership with offices in Atlanta and Augusta, Ga. The new firm succeeds the dissolved partnership of Patchen and Zimmerman. Structural, mechanical, electrical, sanitary and civil engineering services will be provided by the firm.

Public Works

Claudius L. Thompson, former city engineer at Pipestone and Slayton, Minn., has joined St. Paul's public works staff as a senior civil engineer in design and plans and as a coordinator of state-aid projects.

Lee Walker of Great Falls was elected president of the Montana Section of the American Society of Civil Engineers at its annual convention in Billings. He succeeds **R. A. Stephenson** of Helena.

Col. Alfred M. Eschbach (USA ret), former post engineer at Fort Belvoir, Va., has been appointed Spokane, Wash., city engineer.

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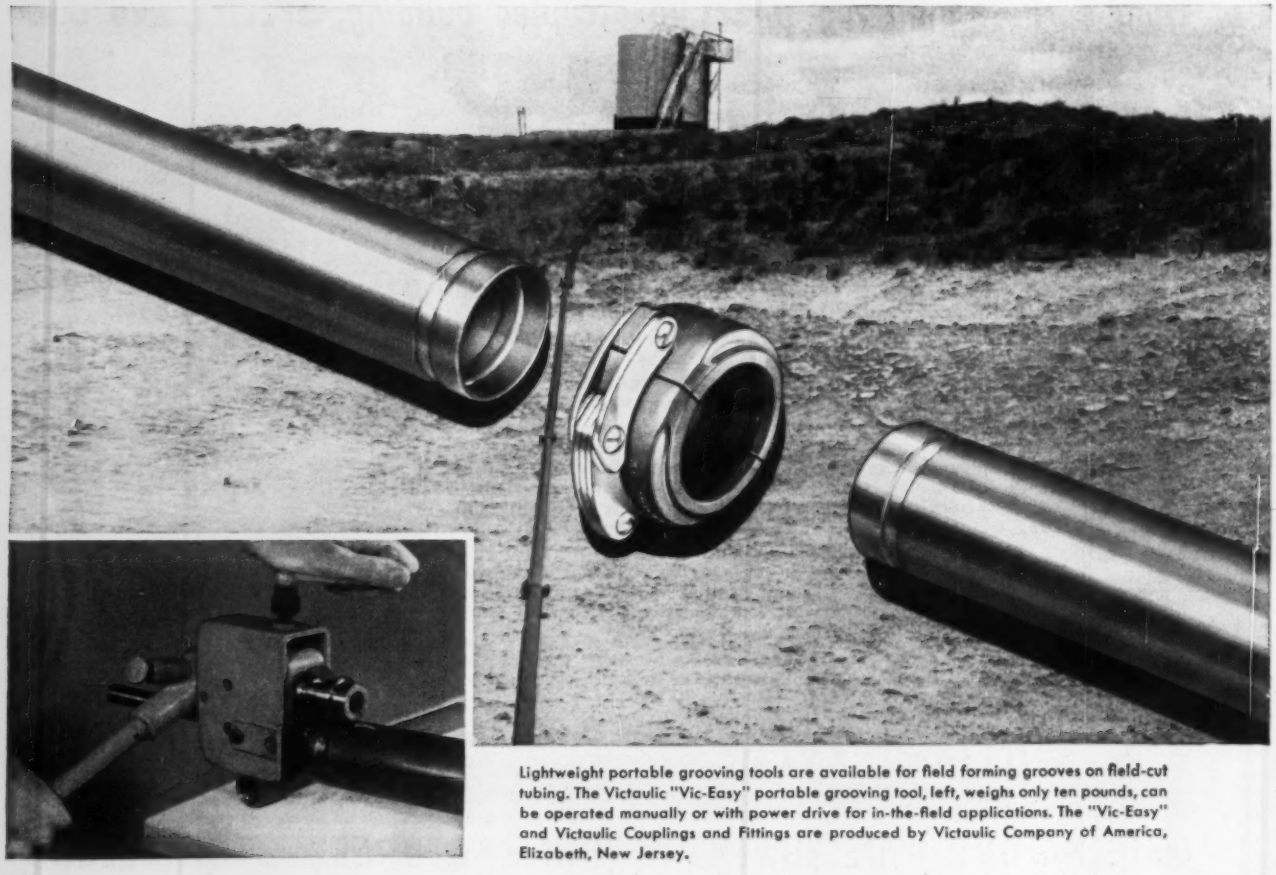

Lightweight portable grooving tools are available for field forming grooves on field-cut tubing. The Victaulic "Vic-Easy" portable grooving tool, left, weighs only ten pounds, can be operated manually or with power drive for in-the-field applications. The "Vic-Easy" and Victaulic Couplings and Fittings are produced by Victaulic Company of America, Elizabeth, New Jersey.

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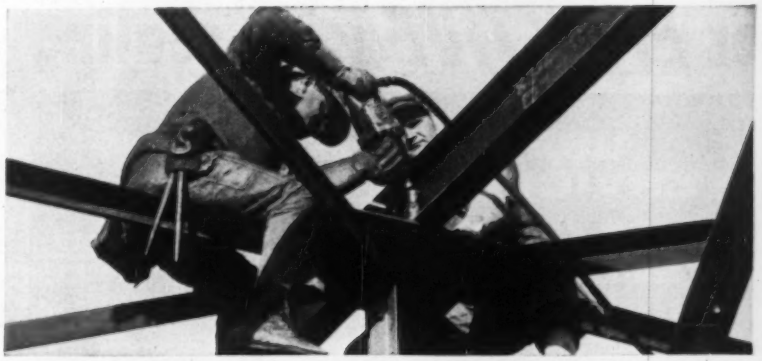

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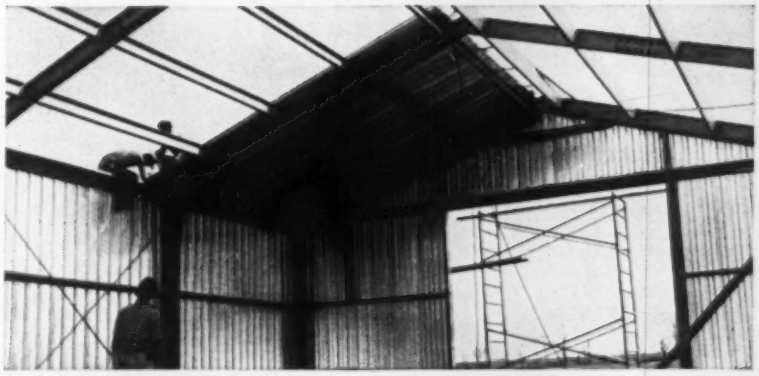

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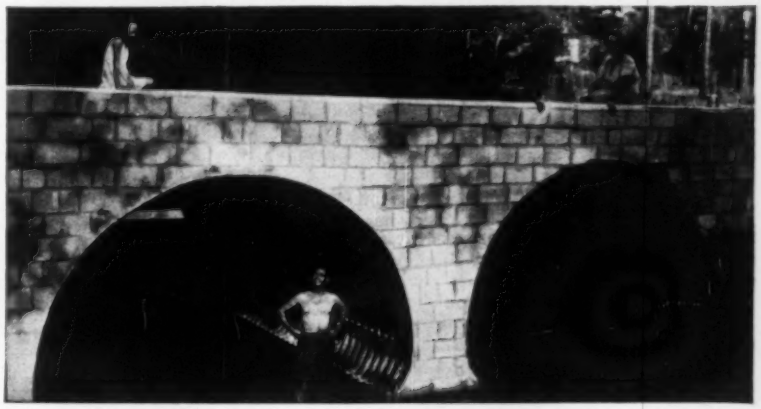

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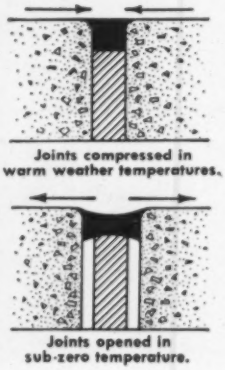

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Obituaries

Bertram C. Hopeman, 81, vice president and treasurer of A. W. Hopeman & Sons Co., Rochester, N. Y., construction firm. He was also president of the New York City shipbuilding firm, Hopeman Bros., Inc.

Frank T. Hogg, 64, well-known architect, in Centerville, Md. He graduated from Princeton, where he was All-American and captain of the football team. He also graduated from MIT. He has designed large homes on Maryland's Eastern Shore.

Charles H. Schaefer, 71, civil engineer, in Jenkintown, Pa. A graduate of the University of Pennsylvania in 1909, he later founded the Philadelphia building firm, Schaefer & Co., in 1921. The firm handled many large projects, including the conversion of Atlantic City's Haddon Hall Hotel into a military hospital in World War II.

Robert E. Nelson, 49, project engineer and head of the civil engineering section of the Harza Engineering Co., Chicago. With Harza since 1938, he designed powerhouses for the Blakely Mountain, Gavins Point, Fort Peck, Norfork, Hartwell, Petenwell, and Castle Rock projects. Mr. Nelson was in charge of the powerhouse design for the $166 million Priest Rapids Dam at his death.

C. Noble Mull, 60, chief engineer of the Mead Corp., Chillicothe, Ohio. A graduate of the University of Wisconsin, he joined Mead as a structural engineer in 1922.

Joseph Cohen, 72, Chicago architect for 44 years. Since 1953 he had been an architect for the city's Board of Education. Mr. Cohen graduated from Armour Institute of Technology in 1914.

Charles P. Stolberg, overseas division manager of H. K. Ferguson Co., Cleveland, Ohio. He directed mechanical work on construction projects throughout the world for the engineering and contracting firm. He was a 1931 graduate of Cornell University.

Harry S. Price, Sr., 82, founder and board chairman of Price Bros. Co., concrete products firm in Dayton, Ohio. He was also director Price Brothers-McClung Corp., Toledo, Ohio, dredging company, and Bottum Corp., Ann Arbor, Mich., electric plant contractors.

Luigi Fortunato, 61, home builder for 40 years, in Wilmington, Del.

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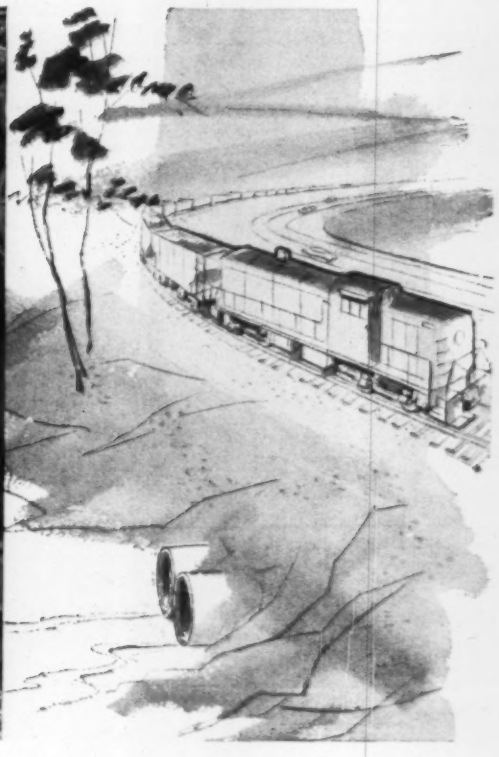

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The Job Ahead: $95 Billion in Modernization

The McGraw-Hill Department of Economics asked a wide sample of manufacturing companies, and experts in other industries, "What would be the cost to replace all obsolete facilities with the best new plant and equipment?" Here is a summary of the estimates. (Details in next table.)

PLAN '59

A report by the McGraw-Hill Economics Department

MANUFACTURING AND MINING	$34.3 Billion
PETROLEUM INDUSTRY	5.3
TRANSPORTATION AND COMMUNICATIONS	18.4
ELECTRIC AND GAS UTILITIES	12.0
FINANCE, TRADE AND SERVICES	25.0
TOTAL: ALL BUSINESS	$95.0 Billion

How Modern Is

The U.S.A. is starting a new period of economic growth, as we leave behind the recession of 1958. This new period presents a challenge to the nation, to the business community and above all to the individual company—to grow *at a profit*.

By now it is clear that growth is the normal way of life for the U.S. Economy. Since 1947, our national product has been growing at a rate of 3.7% a year. And no recession, even the latest and most publicized, has interrupted the trend for long. Now the economy is growing again.

But the conditions of growth are far different from those that prevailed in the years 1947 to 1957.

Today growth in the economy does not mean pressure on capacity, for most industrial firms. It does not mean easy profits. Rather, this is growth under highly competitive conditions, with profits dependent on a firm's ability to hold down costs. **Is our plant and equipment modern enough to do the job?**

A New Survey

To find the answers to this question, the McGraw-Hill Department of Economics has just completed a special survey of business needs for modernization. **The survey shows that it would cost $95 billion to replace today's obsolete equipment.** And this is a priority job, if business is to get costs down for the years ahead.

This tremendous need for modernization presents a challenge to the U.S.A. as a nation. The Communist powers are making a strong and disciplined effort to demonstrate that they can out-produce us—that they can "plow us under" in a contest of industrial strength.

It is a challenge to American business. Our people expect a continuously rising standard of living. Our workers expect wage increases. And often their demands mean price inflation—unless we can achieve sharp gains in output. The public demands higher national income without inflation. This is the challenge to business as a whole.

It is a challenge to the individual firm. Growth in the economy no longer means an automatic rise in sales and profits for any particular company. There are no shortages; industrial capacity is ample. So to participate in growth, the individual firm must achieve better quality or lower costs than its competitors. Otherwise, there will be no profit in growth and no success story for the company.

Is business prepared today for these challenges? The answer, from our study, is clearly "No." The production and distribution facilities of the U.S.A. are not efficient

Where It's Needed . . .

Conducted by the McGraw-Hill Department of Economics in August, 1958

Industry:	Age of Manufacturing Capacity (Percent Installed) Pre.—12/'45	12/'45-12/'50	12/'50-12/'57	Cost to Replace Obsolete Facilities Millions of $
Iron and Steel	47%	16%	37%	2,855
Nonferrous Metals	47	13	40	1,022
Machinery	41	21	38	3,224
Electrical Machinery	34	18	48	1,917
Autos, Trucks and Parts	42	11	47	2,204
Transportation Equipment (aircraft, ships, railroad equipment)	59	9	32	854
Other Metalworking	54	17	29	2,351
Chemicals	30	23	47	3,070
Paper and Pulp	49	17	34	2,655
Rubber	46	9	45	600
Stone, Clay and Glass	46	20	34	1,840
Petroleum Refining	45	26	29	1,499
Food and Beverages	58	19	23	3,443
Textiles	59	18	23	1,001
Misc. Manufacturing	51	21	28	6,236
ALL MANUFACTURING[1]	48	19	33	34,771

[1] Includes petroleum refinery companies listed under "petroleum industry" in previous table.

. . . And How It Pays Off

Profits on modernization—like all business profits—have come down since 1955. However, modernization, in contrast to new capacity, still offers a relatively quick return on investment. Here are companies' answers to the question: "In cases where you are actually replacing old facilities with new plant and equipment in 1958—how soon do you expect these replacement expenditures to pay off?"

Industry:	Percent of Companies Answering 1-2 yrs.	3-5 yrs.	6-8 yrs.	9 yrs.
Iron and Steel	11%	56%	11%	22%
Nonferrous Metals	29	71	0	0
Machinery	12	56	12	20
Electrical Machinery	29	57	7	7
Autos, Trucks and Parts	40	60	0	0
Transportation Equipment (aircraft, ships, railroad equipment)	7	53	20	20
Other Metalworking	38	33	10	19
Chemicals	10	53	21	16
Paper and Pulp	22	22	22	34
Rubber	33	33	34	0
Stone, Clay and Glass	0	57	36	7
Petroleum Refining	16	50	17	17
Food and Beverages	16	44	12	28
Textiles	37	47	5	11
Misc. Manufacturing	9	52	13	26
ALL MANUFACTURING	18	50	14	18

American Industry?

enough to ensure our continuing superiority over the Communist world, to match every wage increase with higher productivity, to do business in a competitive economy at satisfactory profit to the individual firm.

This statement sounds shocking at a time when much industrial capacity is idle and the recession just behind us is being blamed on a surplus of capital goods. But the facts speak for themselves. Here is the record on the past decade of investment in new plant and equipment, and here is our new study of the job that still remains to be done.

Decade of Expansion[1]

Since 1947, private business in the U.S.A. has invested $291 billion in new plant and equipment. Our manufacturing capacity has increased about 80%; electric power capacity, 145%; capacity for basic raw materials, by 55%. The distribution and service industries have increased floor space by roughly 50% in the decade. In 1957 alone, business spent $37 billion on new plans and equipment—more than the combined expenditure in all of Western Europe plus Canada.

But all of this expenditure has not made our facilities as modern as supposed, or as modern as we need. Of the $291 billion invested by business since 1947, roughly $157 billion has been for expansion of capacity. Only $134 billion has been spent to replace old facilities with better, more modern equipment. And in recent years, this investment has not purchased as much new equipment as the dollar figures suggest, because prices of capital goods have climbed.

Our postwar capital investment has repaired the worst of the obsolescence accumulated during the depression and war years. But huge amounts of old equipment are still in use, as shown by the table above. This is based on a survey of the age of manufacturing capacity in several hundred companies, representing all of the major manufacturing industries. Almost 50% of our present capacity was installed before or during World War II. More than 65% was installed before Korea. Expert studies of the major non-manufacturing industries show that the age of equipment, in those industries, is even greater.

Thus, of all business plant and equipment, less than one-third is modern in the sense of "new" since 1950; two-thirds is pre-Korea.

This over-all figure is confirmed by a check on specific industries:

[1] Figures on "Decade of Expansion" are for the years 1947-1957 inclusive, except where specific reference is made to preliminary data for 1958.

. . . By using obsolete facilities, industry wastes

• Nearly two-thirds of our metal-working equipment was installed over 10 years ago, according to preliminary results of AMERICAN MACHINIST's 1958 census.

• Over 65% of the freight cars on our railroads are more than 10 years old.

• Less than half the capacity to process chemicals, rubber or petroleum is new since 1950 – a period that has seen rapid development in such equipment as automatic controls for these process industries.

These examples take on a dollars and cents meaning when we recognize that the latest machine tools are about 40% more productive than 1948 models, and that a combination of new freight cars and modern freight yard equipment can reduce operating costs up to 50%. New instruments, that automatically direct the flow of a chemical (or other raw material) process, can often reduce processing costs enough to pay back the cost of the instruments in one year. These savings cannot be made in older plants. By using obsolete facilities, our industries accept a waste in labor and materials that totals many billions of dollars per year.

Why Productivity Must Rise

The U.S.A. can ill afford this waste. In the economic struggle between the free world and Communist world, our margin of superiority depends on the efficiency of our productive facilities.

For the growth of our own economy, we shall need a sharp rise in productive efficiency. During the next ten years, American business must provide the goods and services required for a population that will increase by 32 million. And the increased population will expect higher living standards. Furthermore, the population in ten years will include a higher proportion of dependent persons – children and retired people – and a smaller proportion of working age men. Thus, with a relatively smaller labor force, industry must provide more goods for more consumers.

At the same time, industry must strive to hold the line against rising costs. In an economy with a tight labor supply, we cannot count on restraint in wage demands, however desirable such a development might be. In the past ten years, hourly wage rates have increased over 5% per year, nearly twice as fast as output per manhour. And this disparity may well continue unless we make more rapid gains in productivity.

We can make these rapid gains – if industry goes all out to modernize its equipment. Output per manhour (in manufacturing) has increased only 2.5% per year since 1951. But this compares with gains of 4% a year in 1947-1950, and over 5% in the 1920s. Today the machines and techniques are available for us to equal, or exceed, these records – to raise output per manhour at least 5% per year. This is a job that can, and indeed must be done, to assure growth without inflation.

The Job Ahead

The dimensions of this opportunity are shown by the table on the previous page. In its survey on the need for modernization, the McGraw-Hill Department of Economics asked a wide sample of manufacturing companies how much it would cost to replace *all* their outdated facilities with the best new equipment available. The Department also interviewed experts in each of the non-manufacturing industries, to find answers to this question. The answers add up to a staggering bill for new plant and equipment.

Modernization of over-age facilities–replacing only what is really obsolete, by today's production standards–would require a total capital investment of $95 billion, or nearly $20 billion per year for the next 5 years.

Furthermore, new production techniques will soon make *today's* plants obsolete, in many cases. Thus, to keep pace with technical advance *from 1958 on*, will require continuing expenditures of $8 to $10 billion per year for modernization.[1]

The total expenditure to wipe out the backlog of obsolete facilities, and keep up with continuing technical advance between now and 1963, would be at least $135 billion.

The U.S.A. has never spent such a sum on the modernization of industrial facilities. Capital expenditures of boom dimension have, in the past, been associated only with the urgent expansion of capacity. **Some forecasters are now saying that because industrial capacity is adequate, the next few years will be a period of low capital investment. The figures above make clear that this would be a national calamity.** The opportunity is there –and the challenge–to invest record amounts of capital in the modernization of plant and equipment.

A National Problem

This also is a challenge to the U.S.A. as a nation. For 100 years, this nation has been looked to as the model of economic development by the rest of the world. For the first time, we face a serious challenge by another nation and another economic system that claims to be better. In a carefully documented 111 page study released in May, the U.S. State Department declared that "the most serious threat" to the U.S.A. today is the drive for economic supremacy by the Soviet Union.[2] Although a much smaller nation industrially than the U.S.A., the U.S.S.R. is today increasing its national output at a rate of 7% per year and its output per manhour by 4% per year.

The U.S.A. does not have to match these specific figures, which represent the results of forced labor in a country just starting to develop industrially. In the contest to win uncommitted nations, the statistics are not likely to be quoted exactly, in any case. But our over-all

billions of dollars yearly

growth in national output and living standards must be so impressive as to leave no question of superiority. Our factories must be showplaces of modernization to the foreign visitor that will leave him unable to say "I saw much better" in Britain, or West Germany, or Russia.

This is the challenge to the nation—a political challenge to be sure. But it coincides with the challenge to the business community and the individual firm. And the way to meet it is the same: by thorough and rapid modernization of our plant and equipment—not by the slow and steady pace of recent years, but at an accelerated rate that reflects the greater pressure for output at lower cost.

Obstacles To Be Overcome

We must face up to the fact that real obstacles—both technical and financial—stand in the way of faster modernization. Some companies do not have the technical "know-how" required for the latest production techniques. Many more lack the financial resources. How can we overcome such obstacles, and speed up the replacement of old facilities?

In the course of its study, the Department of Economics obtained comments on these questions from many executives. One of the problems, as we noted above, has been the urgent pressure to expand capacity during most of the postwar period. In giving their attention to this problem, companies have sometimes overlooked the chance to modernize older plants.

In some cases, equipment has been kept in place because it was satisfactory, and the users were not aware of still newer designs. Some equipment users believe that equipment makers are not sufficiently aggressive in designing and demonstrating new models.

The biggest obstacle—and one that presents a persistent problem—is the shortage of funds in many companies that need and want to modernize. For all corporations, the cash flow from retained earnings and depreciation has increased by more than $5 billion from 1953 to 1958. But a number of key industries have failed to keep pace with the general trend. **These include some of the areas where the need for modernization is most urgent: the railroads, large sections of the textile industry, some mining industries and many small to medium-size companies in manufacturing generally.** The problem of these industries and companies has grown more acute in 1958—since their profits have declined much more than the average for all business.

Any plan to step up the pace of modernization generally must deal with the special situation in these problem areas. Depressed industries and companies need outside help, if they are to modernize. Such help would include a stronger flow of technical information and advice (and occasionally, venture capital) from the more prosperous, inventive industries—as well as advice from equipment suppliers and distributors, industrial publishers and consultants. There is also a public responsibility to help in the problem areas—not with handouts of government money, but with technical assistance and help in finding private capital (like the efforts now being pursued by the Small Business Administration).

Certainly we should lose no time in reforming those provisions of the federal tax laws that now impede investment in modern equipment by hard-pressed firms—especially the outmoded and unfair restrictions on rates of depreciation for tax purposes. At present, the tax regulations require that depreciation be computed over relatively long periods of "useful life" for most types of equipment. And this is a primary reason for the lag in modernization. Machinery generally becomes obsolete long before the expiration of its "useful life" as specified in tax regulations. But it is difficult for companies—especially small companies—to set aside cash for rapid replacement, unless the full amount to be set aside is exempt from income tax. Canada and most European nations allow more rapid depreciation for tax purposes than does the United States.

A combination of self-help with technical help, and a fair break from the tax laws, would do much to reverse the spreading tide of obsolescence in depressed industries, and in many small companies.

PLAN '59

It is this combination that McGraw-Hill advocates as "PLAN '59", to help business modernize now for growth and profits. This is what it will take to make a start in 1959 on the $95 billion job of modernization, disclosed by the study we have just completed:

1. A better flow of technical information on where and how to modernize business plants and equipment.

2. Careful review by the individual company of its own opportunities to modernize at a profit—then action to replace obsolete facilities.

3. Reform of the tax laws, to allow more realistic deductions for depreciation, and permit more companies to finance adequate modernization programs from this source of funds.

Much of this program is already underway. The 34 McGraw-Hill Publications, and many suppliers and distributors of industrial equipment, have stepped up their information programs to start the modernization drive. Preliminary plans of manufacturing companies show a strong emphasis on capital spending for this purpose. In August, Congress passed a bill providing limited tax relief for small business.

But the real task of modernization still lies ahead. It is the greatest challenge, and the greatest opportunity, confronting American business as we move forward into 1959.

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[1] This estimate is based on technical developments reported by McGraw-Hill editors and current price trends for capital goods. It is consistent with the plans for modernization expenditures in 1958-61 reported by companies in a McGraw-Hill survey conducted in April, 1958.

[2] "The Sino-Soviet Economic Offensive in the Less Developed Countries"—U.S. Department of State, May, 1958.

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Two cylinders • 88 cu. in. displ. • 35 HP/3000 rpm

★ **Highest HP/Pound:** This rugged power plant packs more horsepower per pound dry weight than any other engine in its class: outperforms all other industrial air-cooled engines.

★ **Lower Fuel Consumption:** Higher volumetric efficiency means less fuel for the same power: up to 30% savings over competitive engines.

★ **Excellent Response:** Specially developed, two-barrel carburetor gives the C2-90D unequalled flexibility: keeps it "on top of the load" at all times.

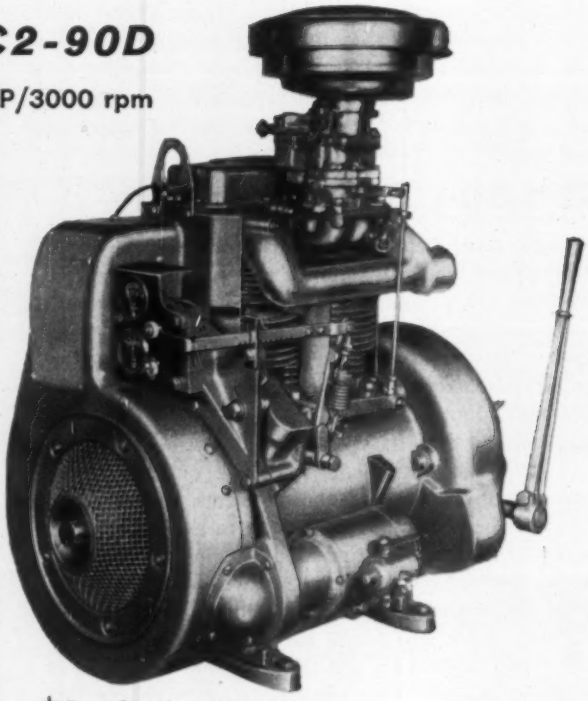
★ **Wide Octane Tolerance:** The C2-90D can be run with gasolines from 75-100 octane rating: no need to "spoon-feed" this tough engine!

★ **Close Speed Regulation:** For constant speed applications, the Hercules C2-90D is unequalled: specially developed governor gives 2½% regulation from no-load to full-load, and regulation of 1% and better has been realized.

★ **Fully Replaceable Bearings:** This feature permits complete "top overhaul": engine need not be dismounted for repairs.

★ **Full-Pressure Lubrication:** Direct-drive, gear-type pump gives positive lubrication to wear points for longer life.

★ **Rugged Construction:** Extra-heavy crankshaft is fully balanced; stellite-faced valves and seats are available for longer wear; main bearings are oversize—no field failures over the past three years.



★ **Easy Starting:** Hot or cold, with manual or automatic starting, the Hercules C2-90D kicks over quickly—in all weather, indoors or out.

AND THE COMPANION CV4-180 . . . IN A CLASS BY ITSELF!

Four cylinders • 176 cu. in. displ. • 71 HP/3000 rpm

★ **71 Horsepower:** No other industrial air-cooled engine comes close to the power range this V4 offers!

★ **Responsive Power:** Carburetion system, governor, and "oversquare" bore/stroke ratio combine to give the Hercules CV4-180 excellent response and close regulation, no-load to full-load.

★ **and Economical, Too:** The Hercules CV4-180 has excellent fuel economy; has all the maintenance-saving features of the C2-90D too, for long-term operating economy.

AND MOST WEARING PARTS ARE INTERCHANGEABLE BETWEEN BOTH ENGINES!

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ENGINE POWER

★ **EFFICIENT COMBUSTION CHAMBER DESIGN** evolved by Lycoming, designers of these air-cooled engines, is clue to their outstanding performance.

Sealed down-draft carburetor especially developed for these engines enables them to pick up load *fast* over entire speed range.

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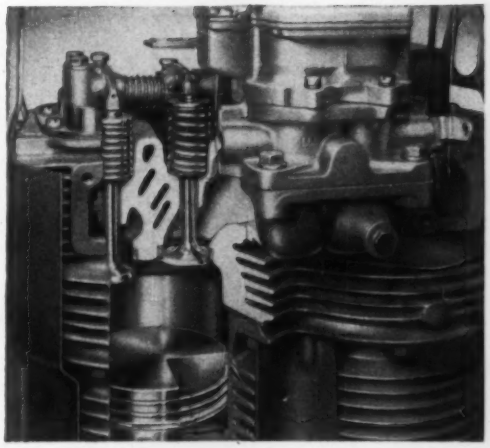
Exhaust manifold provides low back pressure, another factor in efficient operation.



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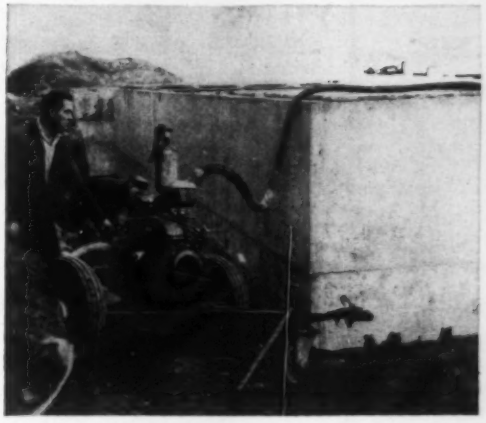
And Hercules air-cooled engines will stand up under constant, grueling service conditions, too. After a 1000 hour test run, all parts of a Hercules C2-90D were within original design tolerances—dramatic proof that these outstanding engines are built for endurance.



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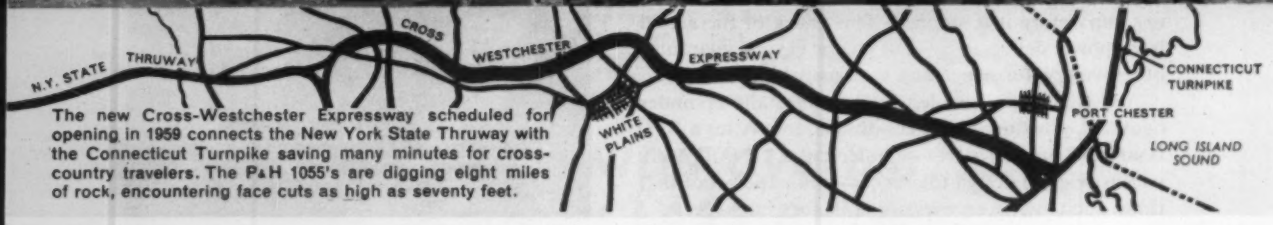
8 of these 3½ yd. P&H shovels dig 3,000,000 yds. on the Cross-Westchester Expressway



The new Cross-Westchester Expressway scheduled for opening in 1959 connects the New York State Thruway with the Connecticut Turnpike saving many minutes for cross-country travelers. The P&H 1055's are digging eight miles of rock, encountering face cuts as high as seventy feet.

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THE JOB AHEAD

Modernizing America . . . It's Construction's Business

"Plan '59" for modernizing American industry, as developed in the report on the preceding pages by the McGraw-Hill Department of Economics, has far-reaching implications for the construction industry.

Most directly, of course, construction will be required for the part of industry's $95 billion five-year job that encompasses plant modernization, as distinct from obsolete equipment replacement. This can add up to a sizable sum whether it goes for new buildings or for revamping old ones—and modernization must include both.

But it is in the supporting facilities for industrial modernization that the construction industry faces a task of monumental proportions. For such a modernized industrial plant as the report demonstrates to be necessary cannot function efficiently—or be justified economically—in a nation that lacks comparable modernity in any of its essential services. When viewed in this light, modernizing American industry means modernizing America in every other physical aspect which is, of course, not only construction's continuing responsibility, but the measure of its overall job.

It may seem surprising that American industry needs major modernization, since it has invested $291 billion in plant and equipment over the last decade to increase manufacturing capacity by 80%. The fact is, however, that more than half of this sum went for industrial expansion in entirely new facilities, leaving only the remainder for modernization or replacement of existing units.

Of the nation's total industrial plant, two-thirds is still more than 10 years old. It lacks the efficiency to compete profitwise with the new plant. It lacks the capacity to assure our continuing superiority over the Communist world. And it is woefully inadequate to assist in an increase in worker productivity commensurate with increasing wages.

Industrial modernization, therefore, is necessary even though industrial capacity may be ample for the time being. A private enterprise economy grows on profits first and increased output second. And much of American industry is unprofitable. Moreover, since it is largely industrial profits and industrial wages that power the entire economy, all of the facilities required for a higher standard of living—and these are the facilities supplied by construction—are dependent on them.

Plainly, modernizing American industry means modernizing America in all of its aspects. To be truly modern, for example, modernized industry will have to be served by modernized transportation—rail, road, air, and water. Raw materials and parts must flow smoothly to the manufacturing plants. Finished and semi-finished goods must flow out. Workmen must be able to get to their jobs easily and back to their homes quickly. Their wives must be able to reach shopping centers quickly.

A modernized industry will also need water, lots of it, and it will require facilities for waste disposal, of a special nature and on a grand scale. Process water and water for domestic use will have to be provided at locations where plants have to be located for other reasons, regardless of whether water is readily available. Poor waters will have to be treated, seawater may have to be desalted. Streams cannot be polluted by disagreeable or disease-carrying wastes in a nation striving for overall efficiency.

But these patently essential facilities are by no means all that a truly modernized industry will require. It must operate in a modern, progressive environment. Homes must be modern, not only for industry's workers, but for everybody. Office buildings and stores need to be as modern as manufacturing plants. Public buildings cannot lag behind in the modernization effort. Power facilities, flood control, communication, everything that makes up the physical plant of the nation is tied to any such program of industrial modernization as the one proposed.

This theme is developed further in several articles that follow. It is the theme of building a greater America. Every engineer and construction man has a dual responsibility in attaining this. Not only must he build what is required, he must, as a particularly qualified citizen, assume a leadership role in the task of selecting what is to be built and when. That, too, is a part of our theme.

"Plan '59" for modernizing American industry covers the five-year period from now to 1965. Probing construction's prospects during the same period, as is done in the concluding article of this report, reveals that its cumulative expenditures can exceed $400 billion. Carried to 1975, this cumulative figure reaches well above the stupendous total of a trillion dollars. By viewing construction in such terms, "Plan '59" for modernizing American industry takes on its true significance. **It is the foundation for building a greater America—construction's prime job and major responsibility.**

THE JOB AHEAD

Modernizing Transport

Here are Some of the Big Needs...

... for highways

Faster progress on main road net
More city arterials and parking
Increased attention to feeder roads

... for railroads

Letup on rules that reduce earnings
More centralized train control
Electronically operated freight yards

Providing the United States with a serviceable transportation system has been a never-ending job from the covered wagon and river boat eras to the present day. At times the system has been more adequate than at others, but seldom, if ever, has it been as modern as the technology of the times could make it.

Today, with all the major divisions of the nation's transportation system showing various degrees of insufficiency, the need for modernization is greater than ever.

There is evidence in the stepped-up highway program of a realization that a truly modern road system must be developed and can be paid for. The arrival of the jet airplane, with its huge passenger and freight carrying potential, has also stimulated belief that more efficient airports are within our means. A number of ocean ports and even some inland waterways have been admitted to be inadequate. And the rapid deterioration of railroad service is beginning to frighten government authorities—local, state and federal—to such a degree that drastic actions to aid the railroads in their quest for earnings adequate to increase their efficiency are being seriously considered.

This realization—that a more modern transportation system is feasible economically—has arrived none too soon if a modernized American industry is to be served properly—and if a totally modernized America is to emerge and insure the increased standard of living everyone seeks.

Fortunately what has to be done physically to create a modern transportation system is rather well established by experience on the bits and pieces that have already been modernized. Here is what the record shows.

Highway Modernization

Thanks to the 3,000 miles of toll roads constructed since the war, what constitutes a modern, main-line highway is pretty well established. Thus, it should have:

- Capacity adequate for the next 10 years.
- Grade-separated, controlled access.
- Traffic lanes 12 ft wide, with decelerating and accelerating lanes at all exits and entrances.
- Two traffic lanes each way for traffic up to 1800 vehicles per hour in rural areas and 2600 in urban areas; for higher traffic volumes, three lanes each way—or more under congested urban conditions.
- Median strips separating opposing traffic, and usable shoulders at least 10 ft wide.
- Bridge widths that do not constrict the highway.

Rural roads built to such designs could carry heavy traffic safely at 50 mph and light traffic at up to 70 mph. For urban areas the comparable figures would be 35 and 50 mph. These would unquestionably be modern roads.

Feeder roads to such main highways must also be as modern as their traffic volumes warrant. A minimum modernization requirement for such secondary and tertiary roads is usability with certainty and safety, and some of the mileage will be important enough to warrant improvements of main artery caliber.

In total, therefore, modernization of the country's highway system is a continuing construction task of herculean proportions. The commitment to build the 41,000 mile interstate net at a cost of more than $30 billion is a giant step in this modernization task. Likewise, Congressional action this year in increasing funds for other federal aid roads by about 20% makes further progress possible.

But even the substantial sums committed to highways do not produce accomplishment at a fast enough pace. For one thing, modernization lags on most of the non-federal-aid roads. For another, the problem of city street congestion and parking remains virtually unsolved. Modernization of highways is moving, but it must move faster.

Railway Modernization

Even though highway modernization may not be moving as fast as desirable, the situation is far from gloomy. Nothing like this can be said of the railroads.

With minor exceptions, railroad modernization remains an unrealized hope because the cost of merely maintaining existing facilities forecloses any possibility

For a Nation on the Move

. . . for airports

More efficient terminal buildings
Runways suitable for jet operation
Adequate parking and road layouts

. . . for water transport

Dredging in ocean harbors and lake ports
New and more efficient piers
Deeper, straighter river channels

of real capital improvements. This is a tragic situation for the railroads, and it is equally tragic for the nation.

Railroads contend their private, regulated status places them at an impossible disadvantage with their competitors, many of whose capital improvements are government-supplied. The railroads can only modernize if their operations are profitable enough to produce a surplus. But this happy state recedes farther from reach every year.

Made desperate by their situation, the railroads would like to cut their long haul passenger service to the bone and give up entirely the commuter service that many of them supply to our larger cities. Either of these actions would be a national calamity.

It seems clear that modernization of the railroads must start with a revision of the federal government's policies affecting them. Fortunately, a growing awareness of the plight of the railroads and of their essentiality has stimulated a trend toward more drastic measures to help them. And once the roadblocks to efficient, profit-making operations are removed, modernization in the physical sense can begin.

What would modernization of the railroads include? Guided by what the more progressive and profitable roads have done, these are some of the facilities, involving construction, that would pay off in greater efficiency:

• **Centralized train control**—This method of throwing switches and actuating signals over distances up to 200 miles from one central point has already been installed on nearly 20,000 miles of track, and could economically be applied to an additional 35,000 miles. With the dispatcher knowing, from illuminated diagrams, where every train is at any given moment, he can greatly speed up train movements and use tracks to their full capacity.

The significance of centralized train control installations from a construction standpoint is that many new and longer sidings would have to be built, and that a good many miles of unnecessary track would be abandoned and removed.

• **Electronic hump yards**—These new types of freight car classification yards have introduced unbelievable economies. One installation is said to have practically paid for itself in the first year of operation. Costing upwards of $10 million each, they can classify as many as 9,000 freight cars in 24 hours.

To install these electronic yards, an existing yard is usually completely rebuilt with new grades, new trackage and the extensive underground facilities required. Usually, one or two other old yards can be abandoned.

• **Continuous rail**—Roads that have eliminated rail joints by substituting long stretches of welded continuous rail are increasing in number. Relieved of joint maintenance and provided with smoother track, the roads have realized significant savings.

• **Other improvements**—Were it not for enforced economies, many more track-gang operations could be mechanized, and needed new bridges, shops and freight stations built. Given the possibility of profitable business, railroads would also likely go to full electrification on many more miles of line.

For construction of all kinds the railroads have been spending only a little more than half a billion dollars a year. They should probably be spending three times that amount to assure the United States a railroad system capable of serving its needs. In some way the railroads must be made profitable enough to undertake such a spending program.

Airport Modernization

Of late, airport modernization has been referred to almost exclusively in terms of commercial jet plane requirements. However, large numbers of airports will seldom, if ever, be jet stops; and they need modernizing too. Their modernization needs stem from the great increase in piston plane traffic, and it this traffic that they will have to continue to serve. The advent of the jet plane, with its larger passenger loads and greater speeds, merely accents this traffic problem, which is the motivation for modernization everywhere.

(*Story continued page 72*)

THE JOB AHEAD

. . . Modernize transport in all its forms

That airports, which were ultra-modern less than 20 years ago, have to be extensively modernized is strikingly illustrated by La Guardia Field, New York, also an example of modernization solely for non-jet, domestic traffic.

Built in 1939 at a cost of $40 million, La Guardia is now undergoing a $35 million modernization that includes a new terminal building, extensive car parking facilities, new roadways and some runway strengthening for planes weighing up to 175,000 lb. So, without consideration of jets, La Guardia, which now handles about 5 million passengers a year, is being fitted for 7 million by 1965—all domestic and all probably traveling in piston planes.

There are many other airports that can suitably be modernized on the La Guardia pattern.

In terms of the size of the modernization job, of course, the airports that have to be fitted to serve the high-flying, long-distance jets will far outclass the La Guardia operation. So, taking all kinds and sizes of airports into account, the over-all airport modernization program is estimated to require an expenditure of $1.1 billion over the next four years. About half of this would go to the fewer than 100 major airports in the country. Of this $500 million, some $200 million would be needed for terminal buildings, $135 million for runways and taxiways, $75 million for hangars, $35 million for terminal area improvements, $28 million for roads and parking and the rest for miscellaneous purposes.

A modern airport then will require:

• **New terminal buildings**—Most of these will be two stories high, with passengers from planes arriving on the lower level and departing from the upper. Two-story fingers will also extend into the apron area, providing loading and unloading docks for the planes. Special sound deadening designs will be incorporated in terminal areas subject to excessive noise from planes outside. And since long walks will be necessary in many of the larger terminals, moving sidewalks may be installed, as is being done in Dallas. Where many airlines have to be served, each may have a separate terminal at the airport, as is being done at New York's Idlewild.

Greatly improved baggage handling facilities will have to be supplied in these new terminal buildings. Large and comfortable lounges for passengers waiting for immigration and customs processing will also be a part of the layout. Attractive and well stocked shops to supply every travel need will be a part of these terminal layouts. And in many cases hotels to accommodate stop-over passengers will be conveniently located in the area.

• **Effective ground transportation**—Modern grade-separated highways will serve these new terminals, probably double-decked at the building itself to separate incoming and outgoing passengers. Ample, conveniently located parking fields for visitors and employees will be required. And for some of the big city airports located far from the business center, rapid transit rail lines must eventually be considered as part of a modernization program.

• **Better runways**—The jet plane will require longer and smoother runways than have yet been considered necessary. Minimum necessary lengths are still the subject of controversy, but 11,000 ft at sea level locations is authoritatively proposed; the Airline Pilots Association wants 13,500 ft.

Runways for jets need not be wider than the 150 ft now generally used, but 50 ft wide stabilized shoulders on either side will be desirable. Taxiways of 75 ft, on the other hand, will not be wide enough to eliminate the possibility that gravel and stones will be sucked up by the jet engines; taxiways will have to be widened to 125 ft. Considerable construction at the turnouts from runways to taxiways will be a necessary modernization detail. It will be desirable for jets to turn at much faster speeds than now used, say 45 to 60 mph, so that the turnouts will need to be wide and probably banked.

Runways not capable of taking 300,000 lb airplanes with tire pressures at 200 psi will have to be strengthened. Also, unless present runways are closely oriented to the prevailing winds, new ones may be required for safe jet operation. And finally, because of the noise problem, runways may have to be pointed away from populated areas.

• **More special facilities**—Jets do not use the same fuel as piston planes. Moreover, for takeoffs the fuel is mixed with distilled water. Underground piping and pump installations for both of these liquids must therefore be provided. Special walls or enclosures to protect boarding or departing passengers from jet blasts will no doubt be required. And finally these same jet blasts will apparently dictate the use of resistant pads at the ends of runways.

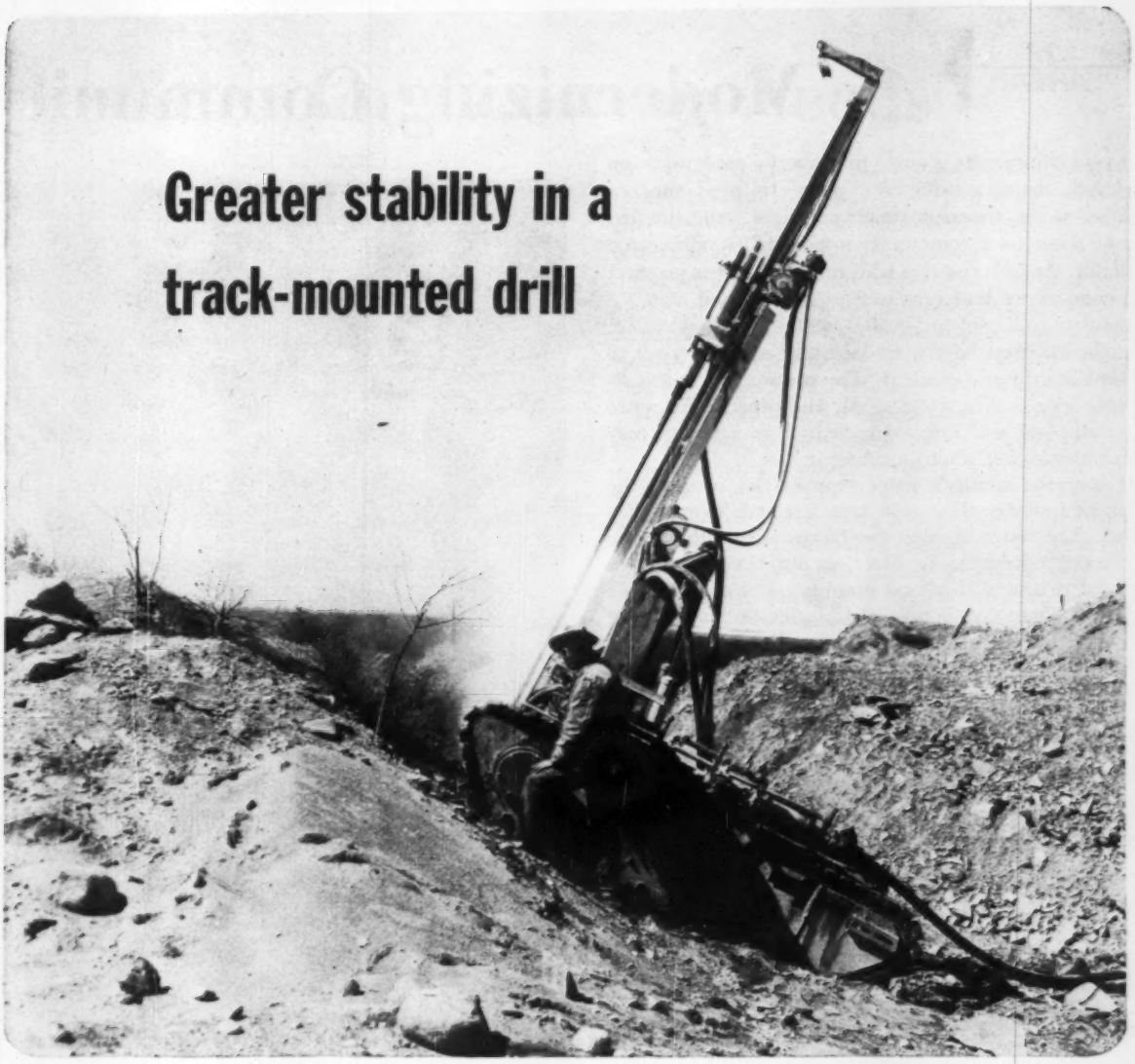
All in all the modernization job ahead on airports is every bit as challenging as those posed for highways and railroads. And it may readily increase in size and complexity if some of the prophecies made about the future of helicopters and small private planes come true.

Water Transport Modernization

Even if a nation had thoroughly modern facilities for air, road and rail transport it would still need a fourth means of moving its products—by boats and barges.

And the water transport facilities of the United States are by no means as modern as they should be. Here, too, a continuing job is in prospect in dredging ocean and lake port harbors, building new piers and deepening and straightening river channels and inland waterways.

The great St. Lawrence Seaway, now approaching completion, is a prime example of water transport modernization. So is the program to deepen the channel and enlarge the locks on the Ohio River. Jobs of such magnitude will be rare, but in total the requirements for more adequate water transport facilities will swell the modernization job ahead.



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THE JOB AHEAD

Modernizing Community

If your community is going to support a modernization of U. S. manufacturing, it's going to need modern utilities—water, sewerage, power and light. And the first two of these are a community responsibility more often than not. As such they are your responsibility as taxpayer and community leader, as well as construction man.

Industry's thirst for water seems unsatiable, yet quenched it must be if manufacturing enterprises are to be kept healthy and efficient. The community unable to provide adequacy in water supply and capacity for waste water disposal will not see industrial growth and may even suffer loss of what industries it has.

If your community's water suppliers are to meet the needs of industry they must talk as equals to manufacturers. The water supplier can be considered the manufacturer of a product; one that goes into the other manufactured products of his community. The community's water plant must modernize if factories are modernizing and adjusting their water demands in the process.

Adequacy is the measure of a water supply; adequacy for the present—and adequacy for as far into the future as possible. And adequacy in both quantity and quality.

Capacity is the measure of a sewage disposal system; capacity to handle normal daily discharges of the community, plus sufficient flexibility to take and treat new wastes and new volumes. Disposal of waste waters ought never be without treatment to reduce their pollutant effect, when such treatment is needed.

Is Your Water Plant Modern?

The ideal water supply consistently provides a pure, palatable product in sufficient quantity to meet every reasonable demand—yet has still more water to sell at rates based sensibly on production costs.

Water source doesn't matter much. Water purification is so far advanced today that the quality of raw water has become less and less a technical problem. But cost is a consideration. The far-distant, relatively pure surface source or groundwater from expensive deep wells must be compared often on a dollars and cents basis with nearer, polluted, raw water. Does the cost of storing and transporting distant water compare favorably with the cost of extensive waterworks needed to purify more polluted waters close at hand?

The modern plant may either bring in water needing little treatment or purify relatively poor raw water.

Quantity is the key. Estimates in gallons per capita are a good guide to figuring future demands. But present demand must be known more precisely.

The water supplier should know precisely his total daily output and its seasonal fluctuations. His sources must be adequate for this output.

Again, the ideal is a source of supply so inexhaustible that the community can invite use of more and more water, truly peddle its product.

Quality of treatment is an assumed requirement of every waterworks. Health standards set on every public supply of potable water are such that few if any communities may produce inadequately purified water.

How purification is achieved depends, of course, on quality of the raw water. Chlorination may be enough.

Sedimentation alone may precede disinfection. Coagulation may be necessary to satisfactory sedimentation. Filtration more often than not follows sedimentation. And in certain instances, tastes, odors, color or hardness may be removal problems to be recognized and tackled.

The important and comforting point to realize is this: There is no normal water treatment problem that can't be handled by proved, modern methods of treatment.

Distribution can be critical. Inadequacy of water sup-

U.S. Waterworks: How Inadequate Are They?

- **62% of some 600 communities recently surveyed said their distribution systems were inadequate.**
- **41% need their water sources bolstered.**
- **42% have transmission inadequacies.**
- **38% need pumping improvements.**
- **29% should have better ground storage;**
- **44% are deficient in elevated storage.**

What They Do

- **65% filter water to purify it, using rapid sand filters in most cases.**
- **34% disinfect only, or use some minor degree of treatment.**
- **97% disinfect.**
- **14% soften.**
- **37% have some form of taste and odor control.**
- **35% correct for corrosiveness.**

Data: U.S. Public Health Service.

Facilities for Growing Needs

U. S. Sewage Works: How Inadequate Are They?

- 33% of all existing sewage plants can't handle present needs, need enlargement or improvement.
- 15% need replacement.
- About 50% of the population needs new or improved sewage works.
- 29% of existing primary plants require replacement.
- 6½% of secondary plants need replacement (but over 11% need enlargement).

(70% of all secondary treatment plants are adequate, but there are not nearly enough of them.)

What Needs Replacement?

- 62% of all septic tanks.
- 20% of all Imhoff tanks.
- 5% of mechanically cleaned primary plants.
- 20% of sand-filter (secondary) treatment plants.
- 7% of oxidation ponds.

ply is often due to inadequacy of the community's distribution system and storage on this system. Increasingly, communities are learning the value of large ground reservoirs that discharge water at peak demand and refill as demand drops off. This permits pumps to work more steadily and economically.

Efforts are being made to cut down the 4,000 to 8,000 gal-per-day-per-mile losses of water U. S. communities suffer because of leaks in distribution piping.

The distribution system is most often the largest single element of waterworks investment; proper maintenance is therefore a must.

When to Modernize

What are reasonable water demands? How much should a community extend its water system or add to its sources to accommodate manufacturing industries within its bounds? These are questions answered only by relating the size and resources of the community to the needs and importance of its industries.

Certain industrial plants, using great quantities of cooling and process waters, must develop their supplies independently. But the great majority of manufacturing industries buy their water from the waterworks just as they buy power from the utility company.

Your community, if it's modern, is delivering perhaps 25% of its daily water production to industry. It should be able to supply potable water to a dry-process industry of any number of employees. It should be able to supply process water needs of a wet-process industry of reasonable size. It should be able to supply water for air conditioning of industrial plants (as well as commercial establishments) although requiring reuse of this water. It is not likely to have to supply cooling water to truly big users. Since cooling water need not be purified, it can come from independent sources.

When Is Sewerage Modern?

Capacity is the key to sewage disposal—capacity to collect waterborne wastes and to reduce their pollution.

Ideal sewage disposal is a collection system reaching all sources of waste water and carrying it through a degree of treatment consistent with the sewage and with the quality and volume of receiving waters into which it will eventually flow.

Standards of sewage treatment are generally set by a state agency. Degree of sewage treatment required generally is established to meet certain standards set on either the discharged effluent or on the receiving waters.

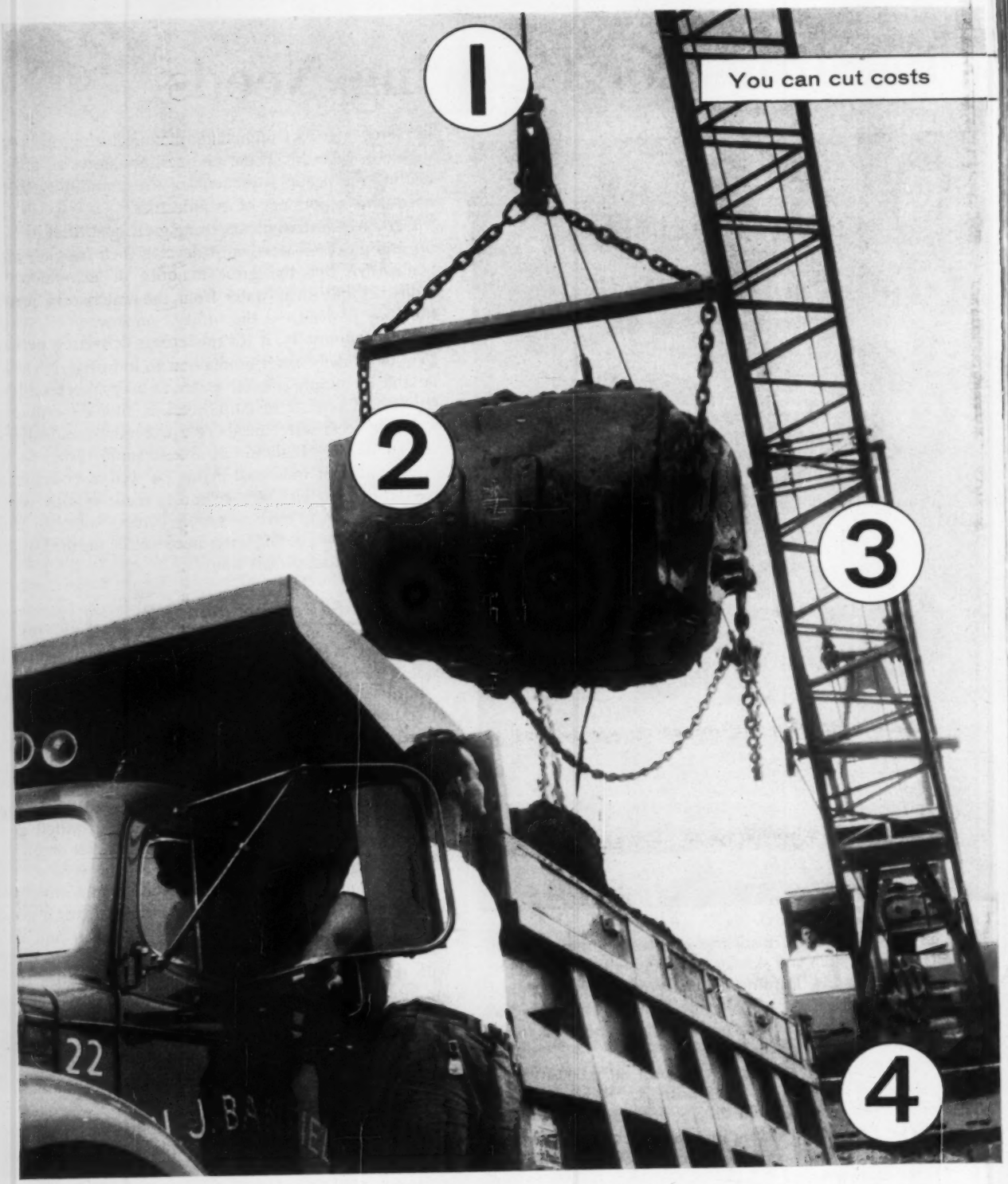
Since standards are set for it, your community can approach the new or modernizing industry with a good idea of what wastes its municipal system can and can not dispose of. When modernizing industries are faced with regulations on disposal of waterborne wastes, they are more apt to approach the community for aid in the disposal problem.

Increasingly, cities are handling the wastes of their industries. Increasingly, too, industries are pretreating their wastes to make them acceptable in the municipal sewage works.

Treatment is a must. Sewage collection is no great problem in the modern community. Not much sewage is let run loose. But, too often, sewers will collect sewage for discharge at a given point—raw, without treatment. **The big community problem all across the nation is putting treatment plants of proper capacity at the tail-end of every sewerage system.**

Too many communities have combined sewer systems

(Story continued page 78)



American

with expert insurance and safety counsel from **A**merican **M**utual men

Just digging dirt— but it could result in a costly accident if...

1. The hoist cable breaks
2. A rock rolls off top of load
3. The boom falls
4. The brake on hoist drum fails

This earth-moving job may not be considered particularly dangerous. But like many other routine construction jobs, it does contain hazards that might take away lives, limbs and profits.

For this reason the American Mutual Safety Engineer is available to help contractors map out a workable safety program designed to reduce and control such hazards.

He will go over every phase of the project with the contractor and his job superintendent to determine the safest and most profitable way to get the job done. His proven safety suggestions not only reduce work-stopping accidents but also cut insurance costs and speed completion of work. Should an accident occur, AM's claims people handle it promptly and expertly. And thanks to AM's medical service program, the injured employee is returned to work as early as possible.

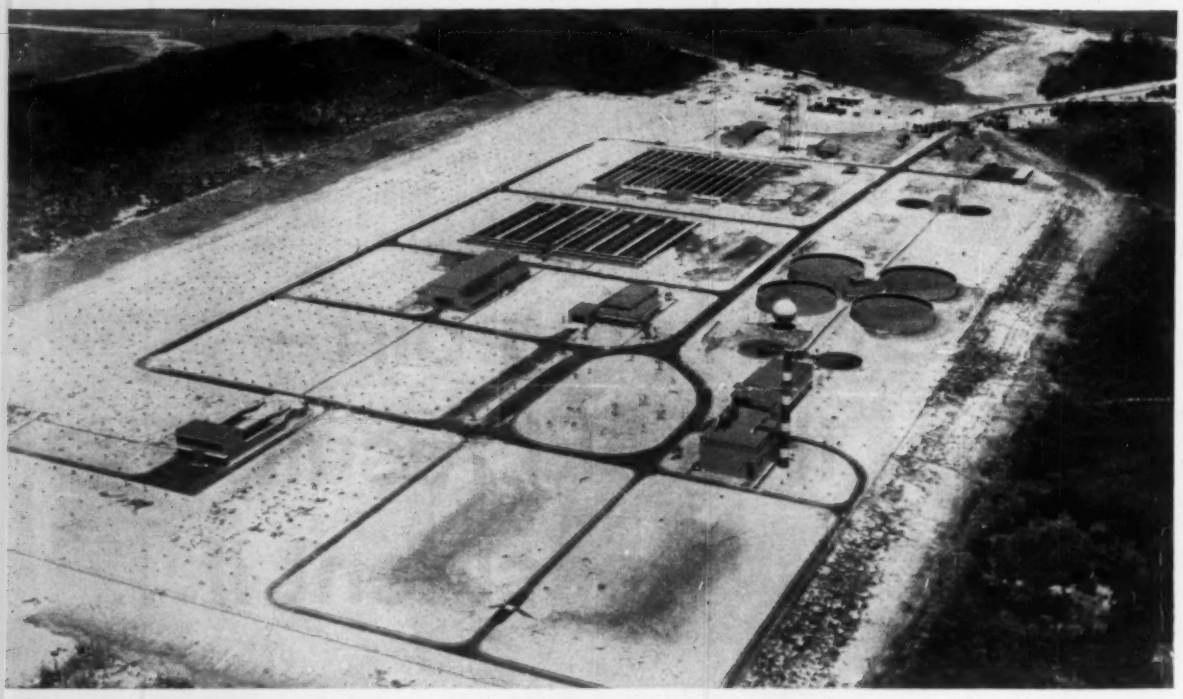
All types of contractors have found that teaming up with the AM Safety Engineer is a sound way to save lives and limbs . . . earn considerable savings through lowered insurance costs plus dividends . . . enter favorable competitive bids.

Good reasons to see your *friendly* AM *man* now! American Mutual, Dept. EN-6, Wakefield, Mass.

Leading writers of Workmen's Compensation, all forms of Liability, Crime, Accident and Health Insurance

Your friendly AM man can advise you on all your liability insurance needs

Mutual LIABILITY INSURANCE COMPANY



NEW SEWAGE WORKS is the modernization need of cities with totally inadequate treatment. This is Miami's.

carrying storm runoff as well as sanitary sewage. Sewage plant capacity can be sized to treat only sanitary sewage, so treatment must be by-passed when a heavy storm's runoff comes through the combined system.

Aside from storm flows, the plant capacity and degree of treatment are fixed by regulations attempting to abate pollution of receiving waters. Depending upon these waters, the sewage may get primary or secondary degree of treatment. And the sludge removed from the sewage may be put farther into receiving water—by barge or long ocean outfall, or it may be disposed of on land by incineration or drying for fertilizer.

Smaller communities get by with less in the way of sewage treatment works. And small industrial plants discharging only domestic wastes get along with hardly more than a large septic tank. Particularly fortunate are small communities whose available space and climate (and state health departments) permit use of sewage lagoons. Sunshine and wind perform naturally for lagoons the processes unnaturally sped up in the modern sewage works.

When to Modernize

What industrial wastes can or should a municipal sewage works accept for treatment? This is another question whose answer depends on the given set of circumstances. Some wastes would disrupt the biochemistry of the sewage treatment process; others could actually help it. Every situation calls for careful study by the sewage works designer and operator.

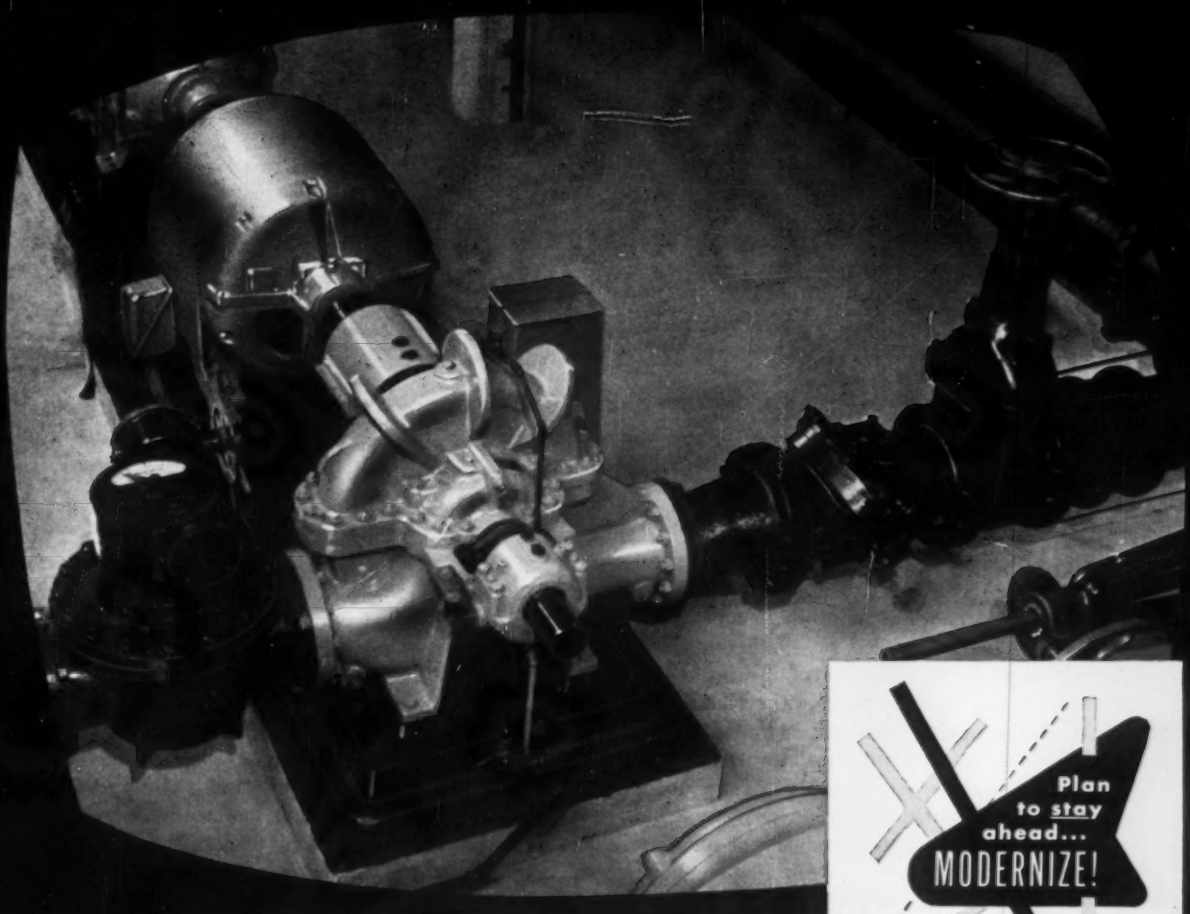
Sanitary wastes and used cooling waters from industrial plants would not normally affect substantially the strength of sewage a community plant receives—only its volume.

Waste process waters, on the other hand, might be extremely acid, very heavy in suspended solids, exceptionally high in biochemical oxygen demand or otherwise beyond normal sewage works capacity. Such industrial wastes may or may not be handled in the municipal plant. Increasingly, they are handled—but only after thorough study of their effect; often after arrangement for pretreatment at the industrial plant; sometimes after revamping of the municipal plant or process.

Whatever the conditions under which industrial wastes are handled by communities, the industry should pay for the service as would an individual. Sewage service charges, on which revenue bonds have been sold, have been based sensibly on chlorine demand, suspended solids and BOD—all factors affecting treatment costs.

Precious little is known about the number and capacities of industrial waste treatment plants independently operated by industries on their own sites. Fortunately, most manufacturing plants do not discharge waterborne wastes directly; an increasing number of them are being connected to community facilities.

The community, therefore, must step up its sewage plant capacity to accommodate new or increased wastes of its industrial establishments. The total volume is now large and it can get only larger as American industry modernizes and prepares for the big production boom it sees ahead.



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One pump does the work of two

One Allis-Chalmers Type SJD pump (double suction, horizontal split-case construction with double volute) replaces the usual two pumps in series or a multi-stage pump. At the start you have substantial reductions in equipment and installation costs. With this single-unit application you also save on maintenance costs and up to 33% in floor space.

These water handling pumps can provide 1000-7000 gpm capacity with a 500-ft head at 1800 rpm.

Allis-Chalmers offers a full line of widely accepted water handling pumps. For complete information, contact your A-C representative, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

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THE JOB AHEAD

Modernizing Buildings

Modernization Yardsticks...

...for factories

Are they: located to best economic advantage?
flexible to meet changing needs?
designed for comfort, efficiency?

...for houses

Are they: big enough?
air conditioned?
properly wired?

Nowhere in the world except in the U. S. would a skyscraper office building in sound condition be torn down merely to be replaced by another one.

The philosophy behind such a substitution probably has been a major factor in making the U. S. one of the world's most prosperous countries. For continuous modernization has kept the nation operating at relatively high efficiency.

Unfortunately, progress has not been uniform; this is the case with buildings. One reason for this backwardness is the difficulty of determining when modernization is necessary and then deciding what it should include.

A yardstick is needed. But what sort of yardstick would be useful?

It can't be purely economic, based on a ratio of dollar savings to capital invested in modernization. For there are intangibles that must be evaluated, such as good employee relations, good public relations, added convenience to all concerned. There are long-term potentials that cannot be evaluated at present. And there are building types, such as schools, for which there are no means of computing in dollars the improvement in output resulting from modernization.

Since the yardstick is to be used for comparisons, it need not have an absolute scale. Now, a relative scale that appears to be very useful for this purpose is the current trend in building design. Why not compare an existing factory with the current trend in factories, an office building with the current trend in office buildings, a house with the current trend in housing? If these structures are behind the trend in substantial respects, would that not be an indication that modernization is needed?

Here, then, is what a modernization study should encompass: (1) Survey of similar but recently built structures. (2) Listing of their features that offer competitive advantage. (3) Comparison of existing buildings with these items.

Factory Trends

Let's see what sort of a yardstick can be set up for industrial buildings. A survey of building designers, contractors and owners shows these as the trends:

Plants are being constructed in areas where they are not likely to be hampered by traffic congestion. Sites are chosen, as a rule, where land is cheap enough to permit purchase of sufficient ground for future expansion, for storing materials and to permit arranging assembly lines in any desired alignment. Water supply must be ample, and waste disposal no problem.

Buildings are designed for flexibility in adapting to changing production needs and for easy expansion.

Interior environment—lighting, temperature, humidity—generally is controlled to improve production efficiency and for employee comfort.

Employee facilities, such as cafeterias, washrooms and parking, are provided to attract and hold good labor.

Buildings are made as attractive as possible, inside and out. No trend is discernible at present favoring a particular type of wall material. But small windows are preferred for enclosing production areas, large ones for factory offices. Extensive use is made of color inside and out. Maintenance is an important factor, too.

Office sections are now being set away from production areas, because of noise and odors and to prevent blocking the assembly line when changes are necessary.

Column spacing generally is about 40 ft for production and storage areas. There is pressure, however, for larger bays; some designers, for example, believe that a 40 x 60 ft bay costs little more than a 20 x 40 ft bay.

The distance from floor to ceiling or underside of exposed structural members has been increased at least one-third in the last decade; 16 ft is about the minimum now.

For fire protection, plants are equipped with sprinklers, smoke vents and draft curtains. Roofing is made of noncombustible materials.

For Better Business

... for office buildings

Are they: close to transportation?
showpieces for sales or rentals?
air conditioned?

... for hospitals

Are they: equipped with intercom systems?
remote control units?
closed circuit TV?

Noise control is an important consideration in today's factories. Noise cuts production, leads to absenteeism and causes loss of hearing.

Illumination levels in factories have risen; 100 ft-c is now considered a minimum for many types of production.

In electrical distribution, industry is turning to: higher voltages to trim conductor sizes and raise lighting efficiency; more substations to shorten secondary feeders and make systems easier to expand; more dependable layouts to keep things moving when power equipment fails; improved conductors to add flexibility and cut labor costs; greater circuit protection to reduce equipment damage and downtime; and better controls to fit complex operations.

Office Building Trends

Observations of the many office buildings constructed recently indicate practices that could be used as modernization yardsticks for this type of construction:

Locations in city business district, close to mass-transportation terminals, are preferred. In such areas, land is expensive; so the buildings are multistory. Depending on land costs and the demand for office space, heights generally range from 20 to 60 stories when the structures are not single-occupancy.

Appearance is a major consideration, because it attracts tenants and customers. The buildings have colorful facades; sometimes all-glass, sometimes colored metal panels or a new-type glazed brick. Many of the structures are set back from the street to provide space for open-air gardens.

Nearly all the newer office buildings are air conditioned. They are brilliantly illuminated (at least 100 ft-c) and acoustically treated inside. Lobbies are luxurious and artistically decorated. Sanitary facilities are plush.

Elevators are automatic and high-speed, to cut waiting and traveling time to a minimum.

Housing Trends

The results of a Bureau of Labor Statistics survey could well be used as the yardstick for modernization of small houses. BLS found:

Houses are getting bigger; an increasing number have three or four bedrooms, while those with only one or two bedrooms are on the decrease. In rental units, average floor area per unit is now close to 700 sq ft.

The majority of new houses have basements, 1½ or more bathrooms and a garage. More than one-third of new houses have fireplaces.

More and more are being air conditioned. Nearly 70% of all new houses have furnaces and duct systems for warm-air heating.

Because of greater use of electric appliances, heavier conductors have to be used in today's houses. No. 12 copper wire is now a recommended minimum; it is 50% larger in capacity than formerly approved No. 14.

Hospital Trends

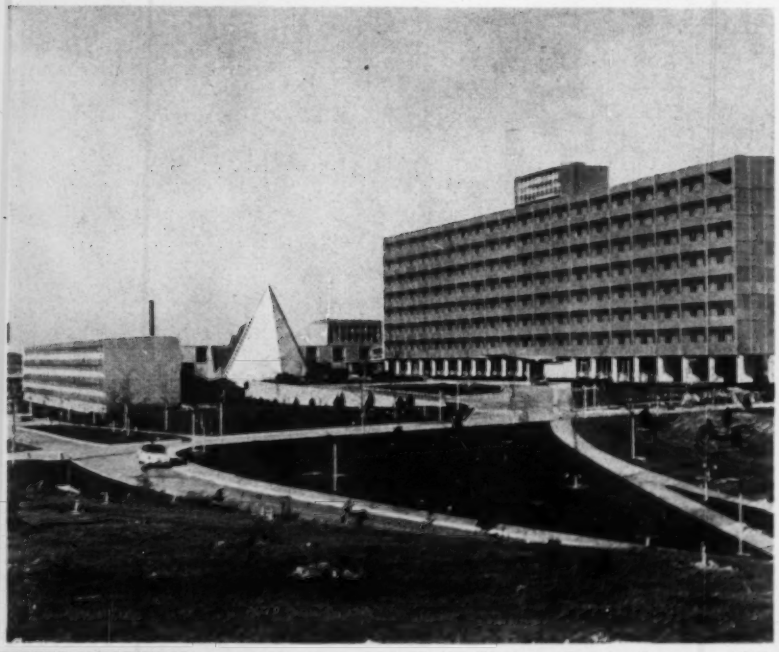
Rising costs for hospital operation, principally due to increased labor costs, have stimulated use of labor-saving devices. These, in turn, are changing hospital design.

If costs are to be kept down, the design should permit nurses to care for more patients than before; i.e; nursing units must be larger. Then, devices must be installed to make this objective possible.

Bedside intercommunication systems permit patients to talk to nurses at a central station, thus eliminating unnecessary trips from station to bedside and other points. Another step saver is closed-circuit television, which enables nurses to observe bedrooms from their stations.

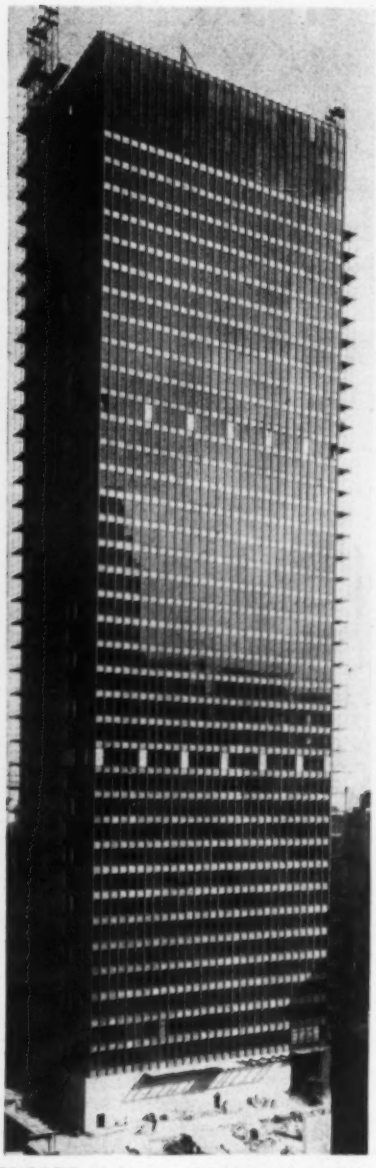
Remote-control devices allow patients to adjust their beds themselves, open and close drapes, adjust lights, heat and air conditioning.

Nurses stations are served by dumbwaiter or vertical



BETTER HOSPITALS, such as this new one built for Allegheny County, Pa., are needed to speed the sick back to health at relatively low cost.

BETTER FACTORIES cut production and distribution costs, attract employees. Shown above is Ford's huge assembly plant at Mahway, N. J.



FACADE of Seagram Building, New York City, pays off in publicity.

conveyors. Laundry and waste chutes simplify removal of materials from work areas. Letter drops, pneumatic tubes or intercommunication systems speed requisitions to dispatchers. Food trays are made up on a kitchen assembly belt and delivered to each floor on a vertical conveyor or dumbwaiter.

At the very minimum, operating rooms should be air conditioned. They should also be properly illuminated.

Yardsticks, In General

Trends in other types of building construction can be tabulated and used as a yardstick for determining the need for modernization. In many cases, a complete tabulation will be unnecessary. For example, it is enough to know that new hotels are air conditioned to conclude that older hotels require at least this much modernization.

Or the trend to motels may lead to the conclusion that hotels should offer facilities and accommodations that would enable them to compete with motels. Provision for adequate parking of guests' cars is a key item here.

The current trend is the clue. Those who can't stay abreast of it are operating at an economic disadvantage. Those who modernize at the right time reap the advantages of progress.

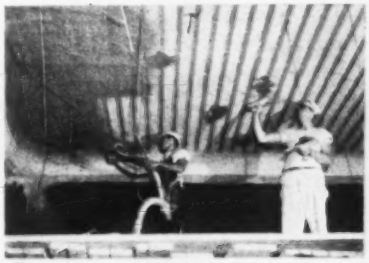
Biggest News in Construction Today!

NEW ZONOLITE® DIRECT-TO-STEEL FIREPROOFING...

Saves Time...Eliminates 7" Height Per Story... Gives 3- or 4-Hour Fire Ratings...Adds Acoustical Benefits...Simplifies Tenant Changes.

Bell Telephone Building
Pittsburgh, Pa.
Zonolite Direct-to-Steel Fireproofing
Arch.: Press & William C. Dowler & Assoc.
Gen. Contr.: Mellon-Stuart
Plast. Contr.: Easley & Rivers

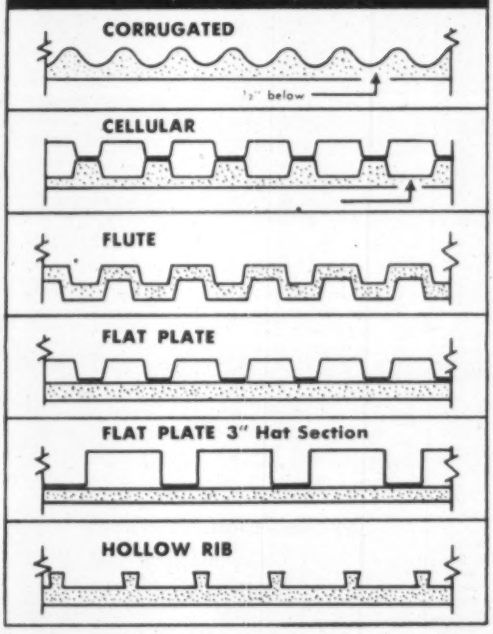
1 Underside of steel deck prior to application of Zonolite Direct-to-Steel Fireproofing. Oil, dirt removed for strong bond.



2 Machine plasterer fills flutes with material. Spot troweling only is required. Finish fireproofing coat is then applied.

3 Finished fireproofing presents pleasing surface. Photos taken at Bell Telephone Company Building, Pittsburgh, Pa.

DIRECT BOND TO UNDERSIDE OF STEEL FLOORS SAVES TIME, WEIGHT, SPACE



Now you can specify fireproofing to be applied *directly to the underside of steel floors*. Zonolite Acoustical Plastic, machine-applied, bonds firmly to steel, saves several inches per story in height, saves days on construction schedules, affords 3- and 4-hour fire ratings.

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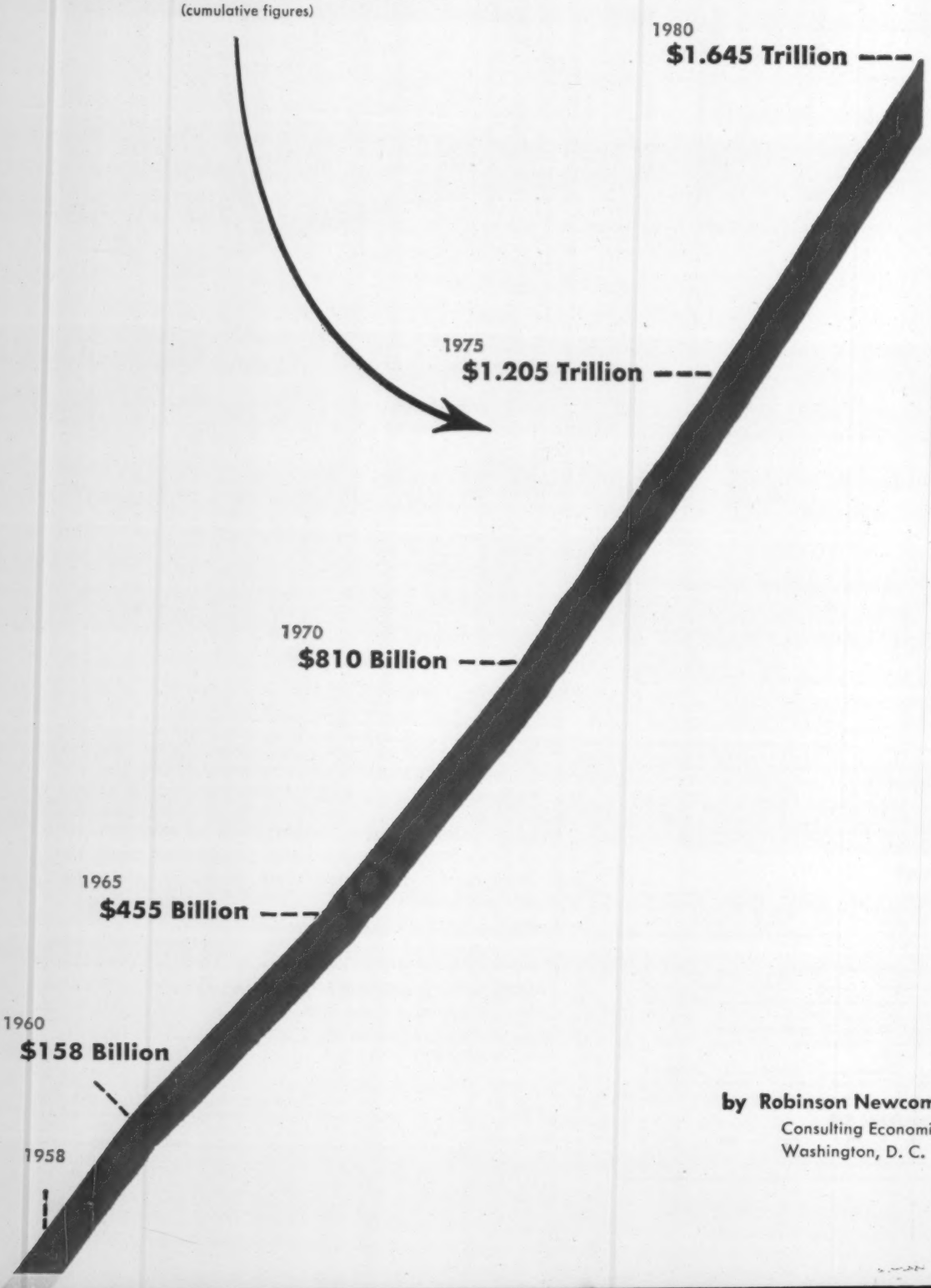
THE JOB AHEAD

There's a Trillion-Dollar

How long will it take to spend a trillion dollars on construction
(cumulative figures)



by Robinson Newcomb
Consulting Economist
Washington, D. C.

Challenge Ahead for Construction

Tremendous growth lies ahead for construction. In 25 years:

- Annual new construction volume will be nearly twice what it is today—$100 billion compared with $49 billion.
- Private construction alone will top $65 billion annually.
- Starting today, more than $1.9 *TRILLION* will go into new construction (See chart at left).

But these rosy predictions won't come true if construction continues to coast. While the economy as a whole has been rising, physical volume of construction has been nearly static for several years, as these constant-dollar figures (47-49 prices) show:

	Construction Volume *(47-49 dollars)*	Gross National Product *(47 prices)*
1955	$35.7 billion	$323 billion
1956	$35.1 billion	$332 billion
1957	$35.4 billion	$335 billion
1958	$35.2 billion	$330 billion

Remember also that construction costs and prices have been rising sharply for years, cutting into construction markets.

What's to be done?

Construction men must exercise greater control over costs and prices before the market for construction will resume the vigorous growth shown earlier.

There are encouraging signs. The highway cost index has dropped sharply this year in the face of rising wages and materials prices. Other types of construction, such as housing, also are showing evidence of better price control.

If we can check inflation, the physical volume of construction should rise by about 3% a year. And the predictions can then become true.

However, rates of growth in various types of building will be quite uneven. Highway construction may grow as much as 10% a year for some time. Residential construction may go up only about 2% a year. That's because we're already building residential units at the highest rate in history.

One phase of the housing outlook is especially bright for ENR readers: The market for multi-family housing will continue to grow at a greater rate than the market for single-family units.

Industrial construction is likely to grow a little faster than residential—probably about 2½% a year.

Commercial construction will grow faster than industrial, about 3½% a year. In 1957 they were about equal in volume. By 1980 commercial may be 50% greater. Reason: The white collar work force is growing faster than the blue collar force, and the requirements for distribution are growing faster than those for production.

Also expected to grow faster than industrial are private schools, churches and other institutional buildings. They were only two-thirds as important as factory building last year. But they may equal factory construction in dollar volume by 1975, and top it by 1980.

Public utility construction will continue to move forward at a healthy rate and may run $10 million 20 years from now.

Total public construction in 1980 will hit about $30 billion annually, almost as much as private construction today. School building volume may double, as may sewer and water construction. Highway spending may reach $11 billion a year by 1965, compared with $7 billion today.

That's the big picture. New developments may bring some changes, but within the limits of present knowledge it's a clear indication of construction's challenging future.

For full details, please turn the page . . .

 Story starts on page 84

Forecast: How Construction Spending Will

ANNUAL RATE (In billions of 1958 dollars)

PRIVATE	1960	1965	1970	1975	1980
Residential	20.0	22.0	25.0	27.0	30.0
Industrial	3.0	3.5	4.0	4.5	5.0
Commercial	4.0	4.8	5.7	6.5	7.5
Institutional	3.0	3.2	3.8	4.5	5.5
Farm	2.0	2.0	2.0	2.0	2.0
Public utilities	6.0	7.0	8.0	9.0	10.0
Unknown	00.0	00.5	00.5	1.5	2.0
TOTAL PRIVATE	38.0	43.0	49.0	55.0	62.0

PUBLIC	1960	1965	1970	1975	1980
Educational	3.3	3.8	5.0	5.5	6.5
Other Misc. Bldgs.	1.7	1.8	2.0	2.3	2.5
Sewer & Water	1.5	1.9	2.5	3.2	4.0
Highways	7.5	11.0	12.0	12.0	12.0
Military	2.0	2.0	1.5	1.5	1.5
Conserv. & Developm't	1.0	1.0	1.0	1.0	1.0
Misc. & Unknown	1.0	1.5	2.0	2.5	3.5
TOTAL PUBLIC	18.0	23.0	26.0	28.0	31.0

	1960	1965	1970	1975	1980
TOTAL PRIVATE & PUBLIC	56.0	66.0	75.0	83.0	93.0

Private Construction Outlays Will

Industrial: Dollars Are Going Farther

A rising volume of industrial construction lies ahead, but this field won't hold the same relative importance 20 years from now. Commercial and institutional construction will grow at faster rates.

One reason for this claim lies in the nature of modern industry. Equipment is becoming increasingly efficient; it turns out more per cubic foot of space used. In some fields, such as petrochemicals, new types of equipment need very little shelter.

Each constant dollar spent for industrial construction tends to go farther today than it did 30 years ago. From 1919 to 1923 industry spent $29 million a year for construction for every point reached on the Federal Reserve Board manufacturing index in 1923; from 1925 to 1929 it was $25 million for each point reached in 1929; from 1949 to 1956 it was only $12 million for each point registered in 1956.

OUTLOOK: An annual rate of $5 billion by 1980. Cumulative outlays for new construction in the next 25 years will run a little over $100 billion.

Commercial: Greater Growth Coming

The white collar work force will continue to grow faster than the labor force as a whole. This means increasing need for office buildings despite new methods of communication and the use of electronic equipment.

Warehouse construction, on the other hand, will probably decline in relation to the volume of goods produced and distributed. More efficient methods of transportation and inventory control will bring this about. There will be a wider variety of goods to be stocked, but business will be able to service more customers per unit of inventory.

OUTLOOK: Warehouses and offices should account for over $3 billion a year in the early '70's and over $60 billion between now and 1980.

The other phase of commercial construction covers buildings that serve individuals—stores, restaurants and garages. This type of construction tends to follow residential building.

The growth in multi-family housing units may bring a drop in store construction, less of a drop in restaurants. Garage work has been slow, but it may turn up.

OUTLOOK: Store, restaurant and garage construction may hit $3 billion a year by 1970, over $3.5 billion by 1980. Cumulative outlays can reach $60 billion by 1980.

Residential: Growth in Multi-Family Units

Total volume of residential construction probably won't rise as much in the years ahead as some observers have expected. But there will be some important changes.

- Engineered construction of multi-family homes will become increasingly more important. So will the market for mobile homes. By 1970 these two may total 350,000 units annually, compared to 275,000 estimated for this year.
- The market for single-family homes may account for less than 75% of all housing in the next 25 years. It's over 80% now.
- The second house for weekends and vacations will be important in the 1970's, if costs are held down.

Those changes will result from a drop in the number of households headed by persons between the ages of 30 to 45, and decline in growth of those between 45 and 55. The net growth will come primarily from young and old families—which have a higher preference for multi-family and mobile homes.

Over-all residential volume should rise about 2% a year. Here's why that's less than expected:

- We've actually been building at the highest rates

Grow for Private and Public Work

CUMULATIVE (In billions of 1958 dollars)

PRIVATE	1960	1965	1970	1975	1980
Residential	57.0	160.0	280.0	410.0	550.0
Industrial	9.0	26.0	44.0	65.0	92.0
Commercial	12.0	33.0	59.0	89.0	125.0
Institutional	8.0	24.0	42.0	63.0	89.0
Farm	5.0	15.0	25.0	35.0	45.0
Public utilities	17.0	40.0	77.0	120.0	167.0
Unknown	00.0	2.0	3.0	8.0	17.0
TOTAL PRIVATE	108.0	300.0	530.0	790.0	1085.0

PUBLIC	1960	1965	1970	1975	1980
Educational	9.0	27.0	49.0	76.0	106.0
Other Misc. Bldgs.	5.0	14.0	24.0	35.0	46.0
Sewer & Water	5.0	14.0	25.0	39.0	57.0
Highways	20.0	67.0	125.0	185.0	245.0
Military	5.0	15.0	23.0	30.0	38.0
Conserv. & Developm't	3.0	8.0	13.0	18.0	23.0
Misc. & Unknown	3.0	10.0	21.0	32.0	45.0
TOTAL PUBLIC	50.0	155.0	280.0	415.0	560.0

	1960	1965	1970	1975	1980
TOTAL PRIVATE & PUBLIC	158.0	455.0	810.0	1205.0	1645.0

Hit $65 Billion a Year by 1980

in history. The Bureau of Labor Statistics reported an average of 1.2 million new units yearly from 1950 to 1956. Census Bureau figures suggest 1.5 million.

• Much of the homebuilding spurt has come from shifting residential patterns; from country to city, from city to suburb. Both these trends will be slowing down.

OUTLOOK: Average volume of new private residential construction of about $22 billion a year between now and 1970, rising to about $30 billion by 1980. In total housing units, the annual rate will average about 1½ million in BLS terms, and 1.8 to 2 million in Census terms, between now and 1970; the rate may run 200,000 over that from 1970 to 1980.

Institutions: Becoming Big Business

Construction of churches, schools, hospitals and other privately financed institutions tends to expand and contract with income. This field should flourish.

Use of professional fund raisers is bringing in more money than amateur efforts used to, but the change in the population's age pattern may make money raising more difficult. Proportionately the ages with rising incomes (30-55) will be declining, while the ages with lower incomes (under 30, over 55) will be increasing.

OUTLOOK: Outlays for private religious buildings will top $1 billion a year by 1975, perhaps $1.1-1.2 billion by 1980. Cumulative total in the next 25 years will run about $25 billion.

For private schools, the cost per student will rise as the growth in number of schools shifts from grade to high school.

OUTLOOK: An annual rate of $1 billion a year by 1970, perhaps $1.5 billion by 1980. Cumulative total: $25 billion in 25 years.

Spending for hospitals and other institutions won't rise as much as for religious and educational building.

Preventive medicine and new chemical, physical and psychological treatments are reducing the time patients spend in hospitals and cutting the proportion of illnesses that require hospital care. The rise in the number of older people may increase the percentage of cases that require hospital care. But efforts are being made to shift the treatment of even the very elderly from an institutional to a non-institutional pattern.

OUTLOOK: Outlays may hit $750 million annually by the early 1970's, and $900 million by 1980. Cumulative total will run $15 to $20 billion in the next 25 years.

Farms: More Scientific Methods

The number of farms is dropping, but the farmers who remain are using a more scientific approach. They're building more ponds, putting in more irrigation, building better homes and better shelter for equipment.

OUTLOOK: Farm construction will continue to average about $2 billion a year by 1970, with a 25-year cumulative total of about $50 billion.

Private Utilities: Slowing Down?

Construction's part in private utility operation may not rise as much in the future. The growth of cities will be somewhat more concentrated in the next 15 years as the proportion of young and old rises and the construction of multi-family units increases.

There will, however, be a need for increasing facilities for service, especially electricity, to built-up areas as the use of household equipment rises.

OUTLOOK: Annual volume for private utilities of $8 billion a year by 1970; about $10 billion a year by 1980. Cumulative total will be about $175 billion in 25 years.

Publicly-owned utilities probably will rise at about the same rates as the predominantly private ones.

(Story continued on page 88)

AHEAD ▼ Story starts on page 84

Public Outlays: $30.5 Billion by '80

Public Schools: Going Up!

Big growth in the next seven years will come in the construction of high schools, where the cost per pupil is much greater.

By 1965 the number of public high school students will rise by 3.4 million, almost three times the rate for the last seven years. Grade school enrollment will rise by a little more than 3 million, half the rate for the last seven years. The growth in total enrollment will be a little less than in the last seven years.

School facilities have been gaining on our needs, with annual spending running from $2.75 to $3 billion. We've been adding 50% more schoolrooms per school unit than needed to take care of the growth in school population alone. This enables us to replace obsolete schoolrooms while adding to the total supply.

One big problem in school construction is the lack of standards. Too often statements about school needs are based largely on subjective standards.

OUTLOOK: School construction spending may top $3.5 billion by 1960. An increase in the birthrate in the late 60's may push outlays to $5.5 billion by 1975 and $8 billion by 1980. Cumulative total: about $125 billion in 25 years.

Other Buildings: Dependable Growth

Hospitals, administration buildings and social service buildings of one kind or another are going up at an annual rate of $1.5 billion today. You can expect dependable growth, about 2½% a year, as government at all levels gives more supervision and services, and recreational facilities are more widely used.

OUTLOOK: Outlays will top $2.5 billion by 1980, with the 25-year total running about $50 billion.

Sewage and Water: Huge Backlog

Spending for sewer and water systems has been rising at better than 6% a year since 1950. Yet the statistical backlog is still huge. This is putting the pressure on the ingenuity of sanitary engineers. They're learning how to provide more service per unit.

Expenditures for added capacity may drop somewhat because the volume of residential building will be more concentrated, at least for 15 years. Fewer feet of sewers and water mains will be laid for each added housing unit. But there will be more need for rehabilitation.

New developments, of course, may bring radical changes in standards and techniques. It may be possible before too many years to dispose of household sewage with less elaborate facilities. On the other hand, per capita demand for water could show a big increase.

OUTLOOK: A growth rate of 5% a year, with annual spending around $4 billion by 1980. Cumulative total is expected to run over $65 billion in 25 years.

Highways: Bigger Boom Coming

OUTLOOK: Annual rate of spending will reach $11 billion by 1965 and $12 billion by 1970. It will level off there. Cumulative total for the next 25 years will be $275 billion. (For more on the highway outlook, see Mr. Newcomb's article in the June 19 issue.)

Defense: An Enigma

The new military posture may not require any large increase in currently planned construction rates. Pentagon budgeters had hoped to make some cuts, but have given up for now (ENR Oct. 9, p. 19). Chances are the total will drop by 1970.

There will be changes in the relative importance of various categories. More construction will be needed to provide more, better protected and dispersed SAC bases. But a relatively small, mobile army may not require continuance of historical rates of military construction. Generally, the new weapons require less plant and equipment per dollar of finished hardware.

One thing that could bring a major change in the picture would be a decision to build fallout shelters. But this seems unlikely now.

OUTLOOK: Defense construction will probably run not over $2 billion per year. The 25-year total will run something over $40 billion.

Conservation, Development: Past Peak

Estimating future outlays for conservation and development is a challenge. If a breakthrough comes in processing seawater, spending for processing, piping and, perhaps, storage, might be tremendous. On the other hand, outlays for new dams have probably passed the peak. With few exceptions, it's cheaper to produce energy with coal.

There will be increasing pressure for cleaner streams and more recreational areas. And conservation and development work for urban dwellers may offset any loss due to dwindling farm population and fewer dams.

OUTLOOK: An annual rate of $1 billion a year, $25 billion over the next 25 years.

Public Housing: A Question Mark

The need for public housing stems more from the inability of minorities to find good housing than it does from their inability to pay for it. As long as the living areas of minorities are restricted, government spending for housing will be necessary.

OUTLOOK: An average outlay of $400 million a year, $10 billion over the next 25 years.

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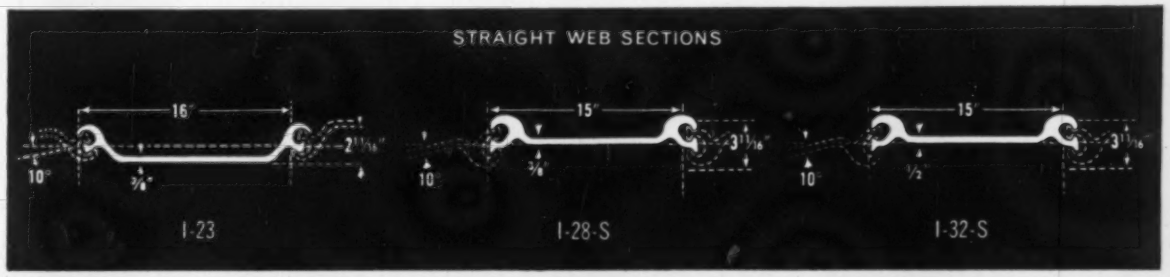
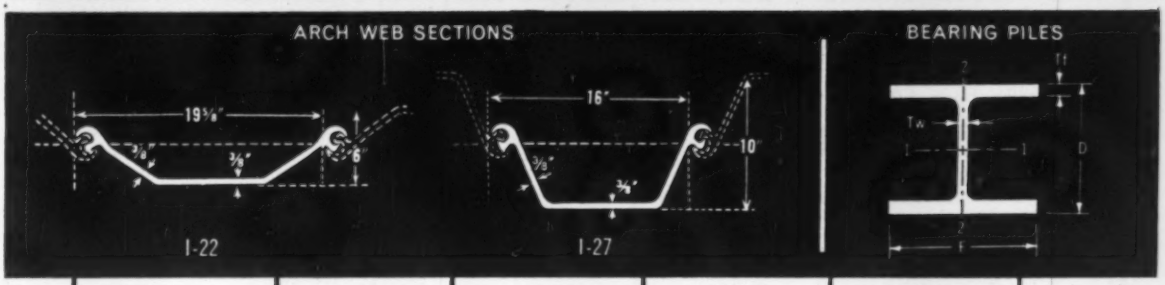
High tensile strength permits driving and redriving as many as 15 times without distortion

All Inland Steel Sheet Piling is rolled from a special steel—ASTM Specification A-328, tensile strength, 70,000 pounds per square inch, minimum yield point, 38,500 pounds per square inch—your assurance of the strength, toughness and uniformity required to withstand repeated driving and pulling stresses.

For years, Inland Piling has been successfully used for permanent and temporary construction applications ranging from jetties, dock and sea walls to wharves and giant cofferdams. Inland bearing piles have helped provide solutions for some of the most difficult foundation problems.





specifications

SECTION	I-23	I-28-S	I-32-S	I-22	I-27
Wt. per ft. of pile	30.7 lbs.	35.0 lbs.	40.0 lbs.	36.0 lbs.	36.0 lbs.
Wt. per sq. ft. of wall	23.0 lbs.	28.0 lbs.	32.0 lbs.	22.0 lbs.	27.0 lbs.
Moment of Inertia	5.5 in.^{4}	3.5 in.^{4}	3.6 in.^{4}	22.4 in.^{4}	53.0 in.^{4}
Section Modulus	3.2 in.^{3}	2.4 in.^{3}	2.4 in.^{3}	8.8 in.^{3}	14.3 in.^{3}
Section Modulus per linear ft. of wall	2.4 in.^{3}	1.9 in.^{3}	1.9 in.^{3}	5.4 in.^{3}	10.7 in.^{3}

BEARING PILES—PROPERTIES FOR DESIGNING

nominal size	weight per foot	depth of section	area of section	flange		web thickness	axis 1-1			axis 2-2		
				width	thickness		I	S	r	I	S	r
in.	lbs.	in.	in.^{2}	in.	in.	in.	in.^{4}	in.^{3}	in.	in.^{4}	in.^{3}	in.
12 x 12	53	11.780	15.58	12.046	.436	.436	394.8	67.0	5.03	127.3	21.2	2.86
	74	12.122	21.76	12.217	.607	.607	566.5	93.5	5.10	184.7	30.2	2.91

Inland rolls both straight web and deep arch piling in a variety of shapes and weights to meet specific piling requirements and for extra corrosion resistance, in Copper Alloy grade. Fabricated and sheet piling accessories including fabricated corners, tees, y's, crosses and taper piles are also available plus H and I Beams for batter or bearing piles and a wide range of other structural shapes.

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6. **TIGHT JOINTS . . .** A full range of leak-proof, low cost, easy-to-assemble joints for pipe and fittings are available for all conditions.

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Why choose between high flow, strength and long life when cast iron pipe gives you *all* of them?

Specify America's #1 pipe and your water system will serve long after the bond issue is retired.

Here is the proof!

FLOW FACTORS FOR CEMENT LINED CAST IRON PIPE

LOCATION	SIZE	TEST SECT. IN FEET	VELOCITY F.P.S.	AGE YEARS	W & H "C" FACTOR
Bowling Green, Ohio	20"	45,592	0.7-2.4	New	142.5
Chicago, Illinois	36"	7,200	2.6-3.6	New	147
New Orleans, La.	12"	39,650	1.2-2.9	New	141
Corder, Mo.	8"	21,350	0.9-2.3	New	143
Univ. of Illinois	8"	400	3.14	New	150
Concord, New Hamp.	14"	500	1.7-2.2	New	151
Concord, New Hamp.	12"	500	2.0-3.4	11	142
West Palm Beach, Fla.	12"	500	3.6-5.4	15	139.5
Greenville, S. C.	30"	87,376	2.4-2.7	12	148.5
Corpus Christi, Tex.	30"	65,641	1.1-1.8	6	146
Summerville, S. C.	8"	500	1.98-2.43	13	142.5
Champaign, Illinois	16"	3,920	3.1-5.6	22	139.3

*Available upon request: Booklet containing flow test and tables on Cast Iron Pipe.

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Chicago-Calumet Skyway

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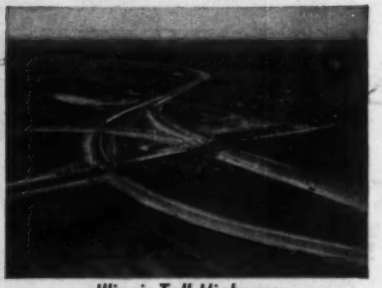

Illinois Toll Highway

Chicago-Calumet Skyway

Chicago-Calumet Skyway

Chicago-Calumet Skyway

SUPERIOR ACCESSORIES For Bridge Abutments, Approaches, Grade Separations, Interchanges, and Decks

Various types of Superior Accessories provided money-saving forming in the bridges and related jobs pictured above. With the increasingly keen competition for this type of work, contractors have discovered that the efficient forming methods of SUPERIOR Accessories offer all-important bidding advantages. Some of these accessories are shown below.

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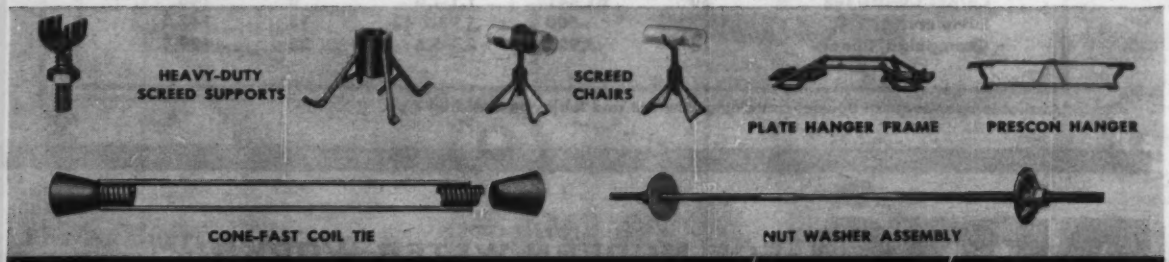

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San Leandro, Calif.

The Law on Surety

A sub's materialmen may be covered by bond

A person supplying materials to a subcontractor has a right of action, in case of nonpayment, against the general's surety under certain conditions. The right depends on whether the parties intended to make materialmen third-party beneficiaries to the surety contract.

In a New Jersey case, for example, Sovereign Construction Co., Ltd. entered into a contract for the construction of a housing project in Princeton, New Jersey. Pursuant to the terms of the contract, Sovereign furnished a payment bond "as security for the faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract."

During the course of construction, Sovereign entered into a subcontract for electrical work with Ben B. Greene, Inc., which in turn purchased certain electrical supplies from Graybar Electric Company, Inc. for the completion of the contract. The total price of the electrical supplies was $6,109.18. Upon the failure of Greene to make payment of said amount, Graybar demanded payment from Sovereign and its surety. Upon their refusal to pay for the supplies furnished the subcontractor, Graybar sued Sovereign and its surety.

The court granted Graybar a recovery. This judgment was affirmed on appeal.[1] The appellate court stated: "The primary concern in ascertaining the rights of third-party beneficiaries is to discover the intention of the parties to the contract out of which the alleged rights emanate. They are the persons who agree upon the promises, covenants and guarantees. They are the persons who create the rights and obligations which flow from the contract. Oscsenda v. Oscsenda, 2 N. J. Super. 353, 63 A. 2d 897; Borough of Brooklawn v. Brooklawn Housing Corp., 124 N. J. L. 73, 11 A. 2d 83.

"Section 165, Restatement, Security, reads: 'Where a surety for a contractor on a construction contract agrees in terms with the owner that the contractor will pay for labor and materials, or guarantees to the owner the promise of the contractor to pay for labor and materials, those furnishing labor or materials have a right against the surety as third party beneficiaries of the surety's contract, unless the surety's contract in terms disclaims liability to such persons.'

"Section 166, Restatement, Surety, reads: 'Where a surety guarantees the performance of a contract by a contractor who does not promise the owner to pay those furnishing labor and materials but agrees to complete the work free of all liens or to furnish labor and materials, laborers and materialmen have no rights against the surety.'"

The court further stated: "The great weight of authority sustains the right of a person furnishing labor and materials on a private building to recover under a contractor's bond in which the owner is obligee and which is conditioned upon the payment by the contractor of all claims for labor and materials. See Annotations, 77 A. L. R. 56 (1932); 118 A. L. R. 65 (1939)."

(1) Graybar Electric Co. v. Continental Casualty Co., 142 A. 2d 114, Supreme Court of New Jersey, Appellate Division, May 27, 1958.

Variety of Rules Used In Construing Contracts

Courts use a fairly cut and dried procedure for determining what written contracts mean.

Here are rules commonly used:

"Where the parties to a contract have given it a practical construction by their conduct, such construction is entitled to great if not controlling weight in determining its interpretation."[1]

The construction of a contract is ordinarily a matter to be determined by the court. Where, however, its meaning is uncertain or ambiguous and depends upon oral testimony to determine its meaning, then the meaning of the doubtful provisions will be left to the jury to determine. In case the contract is ambiguous, the contract will be construed most strongly against the party who prepared it.[2]

Words are to be construed in their grammatical and ordinary sense, unless that would lead to some manifest absurdity or to some inconsistency, or would defeat the purpose of the agreement. The law presumes that the parties understood the import of their contract and that it expresses their intention. In the absence of ambiguity and uncertainty, the parties will not be permitted to prove that they intended something different from that which is clearly and plainly expressed in the agreement. If an agreement is clear, unequivocal and complete in itself, a court cannot by implication, add to or

4-D

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Engineers: Lockwood Greene Engineers, Inc., New York, N.Y.
Contractor: Daniel Construction Co., Greenville, S. C.

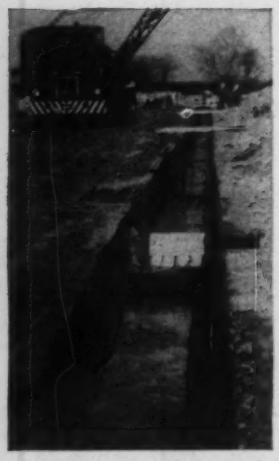
Vibroflotation®

was used to compact the sandy subsoil at this textile finishing plant. Included was the area beneath:

A. All column footings

B. All wall footings

C. The sloping walls of a large water reservoir.



Additional savings were realized through elimination of all formwork for footings. VIBROFLOTATION stabilizes granular soil so effectively that excavations retain neat, vertical walls even after placement of reinforcing steel and pouring of concrete.

A total of 1211 compactions were made to an average depth of twelve feet below bottom of footings. VIBROFLOTATION provided a substantial savings of about $29,000.00 over alternate foundation solutions considered, including piling and deep spread footings.

The sand wall of the Kendall Mills' reservoir was compacted on 7' to 8' centers in two concentric circles 100' and 108' in radius. Subsequently, the bottom and inside sloping wall were overlaid with reinforced concrete paving to form the lining of this 2,300,000-gallon reservoir.

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change the contract. The intention of the parties is to be gathered from the language used in making the contract, read in the light of the circumstances surrounding them at the time. Where by their words the parties have left no reasonable ground for doubt, there is no defensible excuse for interpretation or construction.[2]

(1) Macfadden v. Macfadden, 139 A. 2d 774.
(2) Michaels v. Brookchester, 140 A. 2d 199.
(3) Rosenthal v. American Bonding Co., 207 N.Y. 162, 46 L.R.A., N.S., 561; Gans v. Etna Life Ins. Co., 214 N.Y. 326, L.R.A., 1915 F, p. 703.

Ratification of Contract Held Legally Impossible

A contract invalid at the time it's made cannot be made valid by subsequent ratification. The rule is particularly significant to contractors dealing with governmental agencies.

An example recently occurred in Arkansas, where the legislatively created Farelly Lake Levee District of Jefferson and Arkansas Counties contracted to purchase a right of way at a time when it was in receivership.

The contract provided that those who advanced the money for the purchase would be reimbursed by the district when the district acquired sufficient funds to do so.

A court subsequently ruled that the contract was invalid. It said that while the district was in receivership the commissioners had no power to make such a contract.[3]

It also ruled that the contract could never be validated. It said: "A contract invalid in the beginning for want of power to make it cannot be ratified. Dell Special School Dist. No. 23 v. Johnson, 129 Ark. 211, 195 S.W. 373. The doctrine of ratification does not apply where there is a want of power in the public officer to make the original contract. 43 Am. Jur. 74."

(1) Farelly Lake Levee District v. Hampton, 306 S.W. 2d 699, Supreme Court of Ark., Nov. 11, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phase of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

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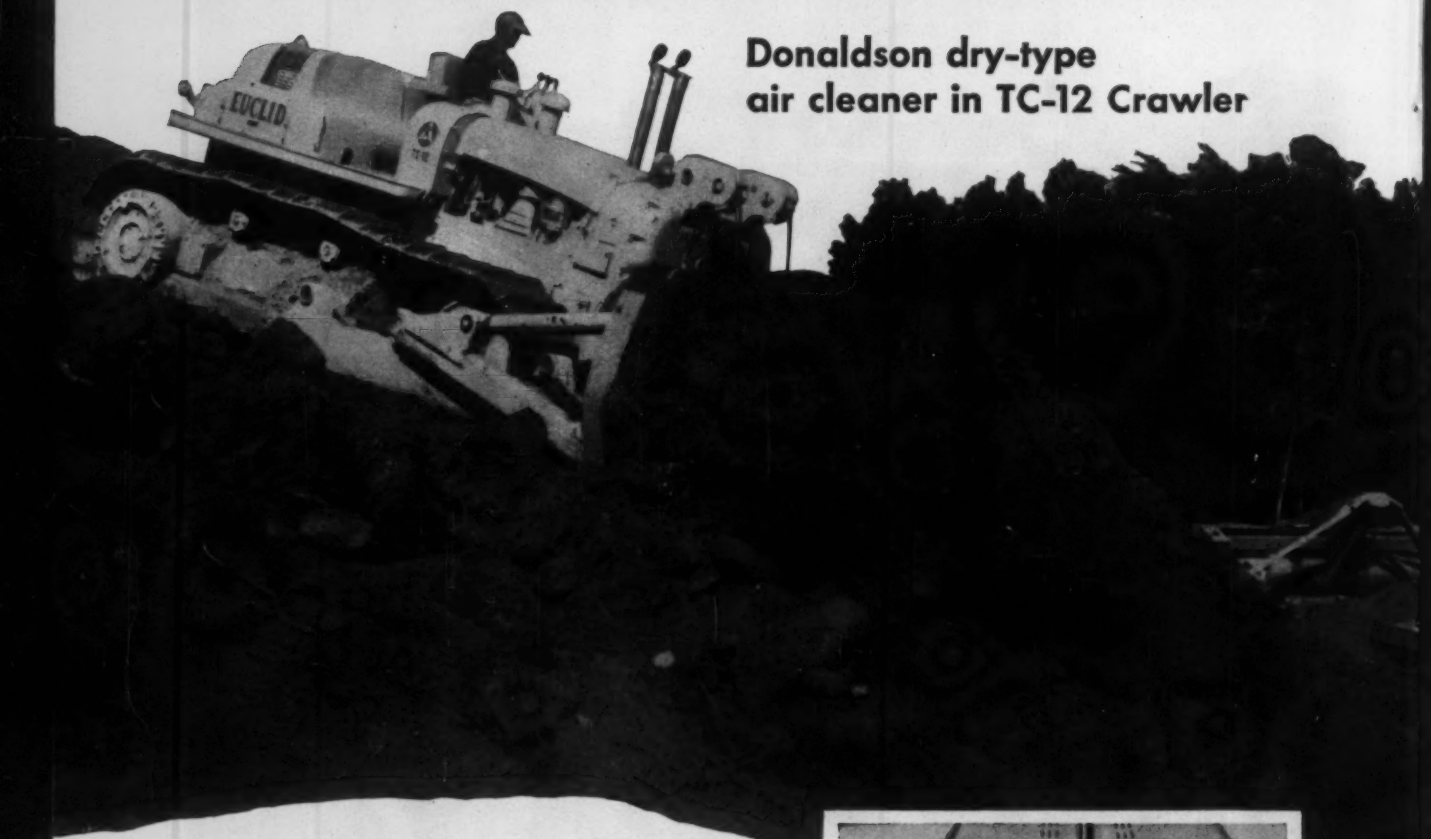


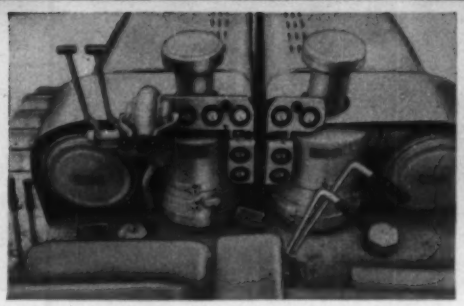
Donaldson dry-type air cleaner in TC-12 Crawler

One of the reasons the new series Euclid TC-12 Crawler provides more work-ability with less down-time is the unequalled accessibility of all major components for quick, easy servicing.

As shown in the photograph, the two Donaldson dry-type air cleaners, one for each engine, are conveniently located for easy access. Both pre-cleaner and secondary filter can be serviced in a fraction of the time required for oil bath cleaners and there's no mess—just empty the pre-cleaner dust cup, clean and replace a paper element in the secondary cleaner.

HIGH EFFICIENCY CLEANER INCREASES ENGINE LIFE

The Euclid TC-12 Crawler is now being built with the Donaclone dry-type air cleaner as standard equipment. This 99.9% efficient cleaner reduces engine wear caused by dust—increases the service life of the engine and helps maintain top operating efficiency. Engine manufacturers say that 8 ounces of



abrasive dust can ruin an engine in a short time. Because of the tremendous volume of air that passes through an engine in a single shift, the importance of air cleaner efficiency is obvious. That's why Euclid uses this Donaldson cleaner on the new series TC-12 . . . it's another example of constant product improvement that makes Euclid your best investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

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FOR MOVING EARTH, ROCK, COAL AND ORE

Books

Weird, Fascinating Project

THE CHANNEL TUNNEL—by Humphrey Slater and Correlli Barnett. 213 pp. Allan Wingate Ltd., 12 Beauchamp Place, London, S.W. 3. 21 S.

For a construction proposal to maintain some spark of life for 150 years and still retain a strong appeal is strange, somewhat uncanny, and even weird. And that is as apt a characterization as can be applied to the tunnel that has been promoted and re-promoted for that many years to join England and France under the English Channel. Weird is also the word to describe some of the proposals that have captured public imagination at various times over the century and a half since one of Napoleon Bonaparte's subjects interested him briefly in the idea of a tunnel under the Channel.

At various times, however, engineers came forward with schemes that were logical enough to enlist the serious support of financial interests and to incite hopeful political maneuvering on both sides of the Channel. Invariably, however, they foundered against the opposition of British military authorities (who wanted no easy road to their island for invading armies from the mainland). Or they were thwarted by the lack of information on the geology of the Channel bottom that the tunnel would have to penetrate. Assumptions that the chalk cliffs on the English and French shores attest to a continuous formation of the same good tunneling material entirely across the Channel were all right for promotional brochures. But the assumptions were not based on facts solid enough to attract the necessary financial backing.

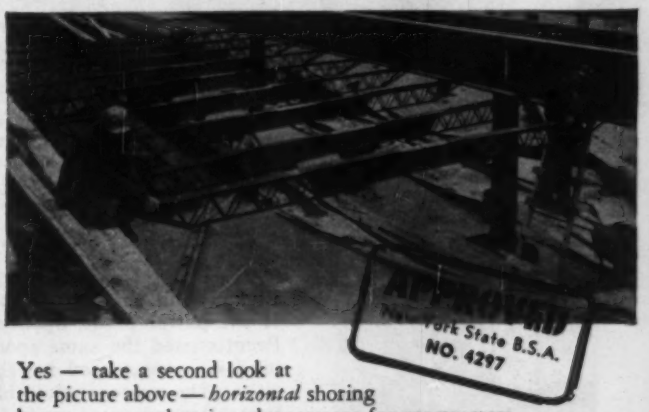
Nevertheless, a Channel tunnel is again very much in the news, and this time with reports of interest on the part of such unquestioned money-producers as the Suez Canal Co., J. P. Morgan and Dillon Reed. Something else that is unquestioned today, and could not be in times past, is the design and construction ability to drive a tunnel under the Channel. And it may well be that the bombing plane and the guided missile have softened the attitude of the British generals toward such an undersea connection with the continent.

The time is ripe, therefore, for a book reviewing the history of this 150-year-old project, and the authors of The Channel Tunnel, Messrs. Slater and Barnett, have written an extraordinarily good one. Weaving politics, intrigue, engineering and finance into a story of disappointed visionaries and diehard fanatics, they have succeeded in bring-

LOOK AGAIN...

THEY'RE HORIZONTAL!

American Pecco Corp.'s New Horizontal Shoring Beams — Geared to Save You Time and Money



Yes — take a second look at the picture above — *horizontal* shoring beams . . . a real major advancement for constructors who have been plagued by today's skyrocketing costs of labor and materials. The Pecco-Beam is used for supporting concrete slab forms for concrete slab construction; carries uniform distributed weights up to 6,600 lbs. Designed on the telescopic principle, it is easily pulled into position and secured by the simple "wedge lock." The only tool needed to complete the job is an ordinary hammer. The Pecco-Beam weighs only 8 lbs. per foot — making it a cinch to move from job to job quickly. Overall efficiency and economy are built-in elements that show up dramatically in the profit picture . . . Available for sales or rental. For further information, write or call us today.

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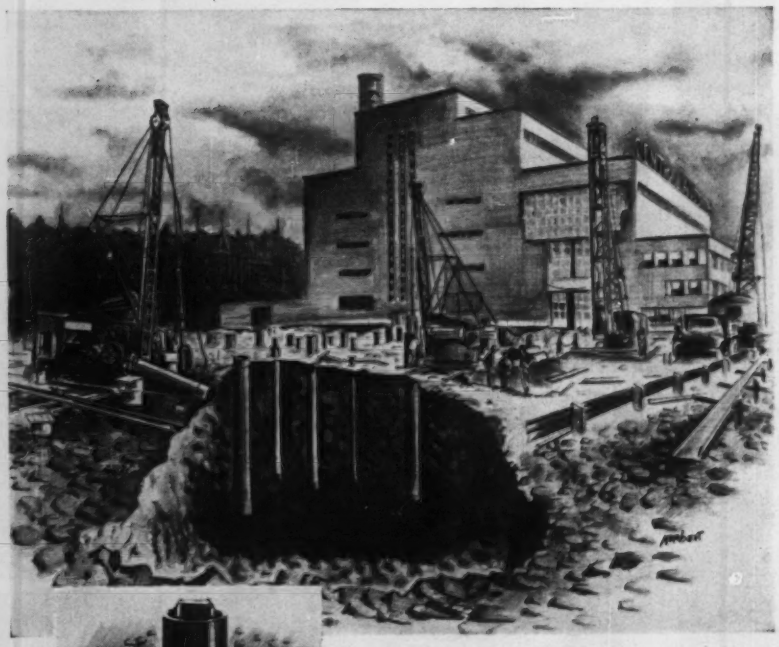
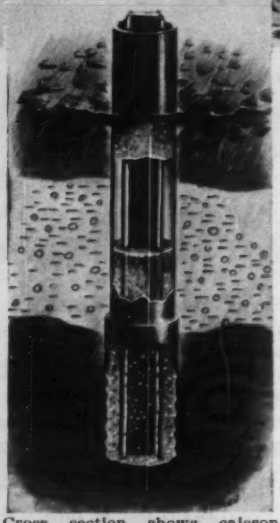
for foundation which must bear heavy loads





Cross section shows caisson shell, concrete filling and steel core. 92 such caissons of 24 and 30-inch diameter were drilled and driven through rip-rap and obstructions, and socketed into rock, for this power plant foundation.

Project: 3rd Unit of Steam Station at Danskammer Point, Roseton, N. Y. for Central Hudson Gas & Electric Corp.

Burns & Roe, Inc., Engineers and Constructors. New York City.

In handling this 3rd foundation unit of the power plant, Spencer, White & Prentis used the same special caisson process as was used for the 2 earlier units. The process offers many advantages. Regardless of ground conditions, water and obstructions, steel caissons can be installed to great depths to bedrock. The core is then embedded in a socket drilled in this sound rock (see sketch at left). Such "locked-in-the-rock" foundations will support superstructure loads up to 1,700 tons each. If necessary, caissons can be placed close to adjoining buildings, thus eliminating cantilevers.

LITERATURE ON REQUEST

Spencer, White & Prentis INC.

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DETROIT: 2033 PARK AVE. · CHICAGO: 221 NORTH LaSALLE ST. · WASHINGTON, D. C.: TOWER BLDG.
OF CANADA: 700 BAY ST., TORONTO · 2062 ST. CATHERINE ST. WEST, MONTREAL

ing the Channel tunnel back to life. And they have reported the engineering problems and possibilities with a clarity that should satisfy anyone wanting to make his own evaluation of the new schemes that will surely be advanced for this ageless and fascinating project.

Reports and Pamphlets

COMPOSTING OF MUNICIPAL REFUSE AND SOME EUROPEAN COMPOSTING OPERATIONS—by John B. Nesbitt. Bulletin B-72. College of Engineering and Architecture, University Park, Pa. $1.00.

WATER RESOURCES PAPER NO. 117—SURFACE WATER SUPPLY OF CANADA—Director, Water Resources Branch, Department of Northern Affairs and National Resources, Ottawa 4, Ont., Canada. $3.00.

MOMENT DISTRIBUTION FACTORS FOR BEAMS OF TAPERED I-SECTIONS—by James M. Gere. American Institute of Steel Construction, Inc., 101 Park Ave., New York 17, N. Y.

WATER-LOSS INVESTIGATIONS: LAKE MEAD STUDIES—Geological Survey Professional Paper 298. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.00.

BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY, 1955—Geological Survey Bulletin 1065. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.50.

YOUR MOST IMPORTANT RAW MATERIAL—by Everett P. Patridge. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $1.25.

FLEXURAL STRENGTH OF HOLLOW UNIT CONCRETE MASONRY WALLS IN THE HORIZONTAL SPAN—Engineering Report 29. Iowa Engineering Experiment Station, Iowa State College, Ames, Iowa. 50¢.

TRANSACTIONS OF SHORT COURSE AND CONFERENCE ON AUTOMATION AND COMPUTERS (Two volumes)—College of Engineering, University of Texas, Austin, Texas.

AMERICAN STANDARD Y14, 11-1958, PLASTICS—American Society of Mechanical Engineers, 29 West 39th St., New York 18, N. Y., $1.50.

ADVANCES IN STEEL TECHNOLOGY IN 1956—Columbia University Press, 2960 Broadway, New York 27, N. Y., $1.00.

QUALITY OF SURFACE WATERS IN ILLINOIS—by T. E. Larson and B. O. Larons. Bulletin 45. Illinois State Water Survey, Urbana, Ill.

ULTIMATE COST OF BUILDING WALLS—Structural Clay Products Institute, 1520 Eighteenth St. N.W., Washington 6, D. C.

MANUFACTURING IN THE ST. LAWRENCE AREA OF NEW YORK STATE—by John H. Thompson and James M. Jennings, 150 pp. Syracuse University Press, Syracuse 10, N. Y. $4.00.

THE NEW ST. LAWRENCE FRONTIER—by Sidney C. Sufrin and Edward E. Palmer. 98 pp. Syracuse University Press, Syracuse 10, N. Y. $3.00.

Nevada State Highway Work . . .

Averages $241,829 a Mile

Gibbons & Reed, Salt Lake City, Utah, got this contract at $1,194,875 on its low bid of $1.14 a cu yd for 369,553 yd of roadway excavation. This accounts for 35% of the total contract. Other bids on this item ranged from $1.48 to $1.78 per cu yd.

Work is for construction of 4.941 miles of Nevada state highway system on U. S. Highway 50 at Ely, and will cost an average of $241,829 a mile. Roadway surfacing width is 40 ft. Removal and reconstruction of some structures, pipe and fencing are included in the contract.

Prevailing wages include: carpenters, $3.15; power shovel and crane operators, $3.615; concrete finishers, $3.55; common laborers, $2.70.

The six bids included:

1C	Gibbons & Reed, Salt Lake City, Utah	$1,194,875
2	Wells-Cargo, Inc., Las Vegas, Nev	1,308,702
6	Silver State Constr. Co., Fallon, Nev	1,401,154

Bids: 8-21-58 Items:	Unit	Quantity	Unit Prices 1C	 2
Signs	ls	job	$1,200	$10,000
Timber bridge, remov	ls	job	125.00	25.00
Overpass, remov	ls	job	11,000	20,000
Portion of reinf conc box culvert, remov	ls	job	500.00	3,000
Retaining wall, remov	sf	1,550	3.40	1.35
Culvert pipe, remov	lf	516	2.00	2.75
Rubble masonry, remov	ls	job	1,200	2,000
Fence, remov	lf	1,380	0.20	0.12
Drop inlet, remov	ea	1	75.00	50.00
Headwalls, remov	ea	13	25.00	25.00
Excavation, roadway	cy	369,553	1.14	1.48
drainage	cy	300	1.20	1.50
Ditches, V type	sta	30	12.00	7.00
Slope rounding	sta	95	12.00	40.00
Overhaul, yd sta	yd sta	789,138	0.015	0.015
yd mi	yd mi	27,695	0.20	0.15
Excavation, structural	cy	3,340	4.00	4.00
Backfill	cy	4,780	3.25	4.50
Water	Mgal	14,597	1.60	1.00
equipment, furn	ls	job	9,000	10,000
Power roller	hr	85	10.00	12.00
Tamp, or pneu tired roller	ft hr	12,578	0.80	0.60
Gravel base, type 1	t	55,667	0.96	0.73
type 2	t	20,684	1.10	0.80
Asph, emul, tp MS-1, diluted	t	53	50.00	41.00
tp RS-2	t	52	50.00	41.00
liquid, tp MC-1	t	191	47.40	40.50
Screenings, ¾"	t	486	4.75	5.00
Asph cmt, 120-150 penetration	t	1,159	43.00	40.00
Surf agg, plantmix	t	16,542	3.15	2.80
open graded	t	1,785	5.40	6.50
Conc, cl AA	cy	941	77.00	75.00
cl A	cy	145	23.00	55.00
Steel, reinforcing	lb	126,980	0.17	0.15
structural	lb	623,400	0.20	0.21
salvaged	lb	171,883	0.06	0.19
rail	lf	200	12.00	17.50
reconstruct	lf	480	3.25	3.50
Pile driving equipment, furn	ls	job	1,000	8,500
Steel shell for piles, furn	lf	5,000	3.65	3.75
drive	lf	4,800	8.85	2.90
Corr met pipe, 24"	lf	882	7.00	7.00
30"	lf	96	8.00	8.50
36"	lf	360	13.00	13.00
arch pipe, 22x13"	lf	120	5.00	7.50
Struct plate pipe, 10 ga, 4 pl, 84"	lf	592	55.00	51.50
Culvert pipe, relay	lf	228	1.50	2.30
Riprap	cy	50	25.00	29.00
Fence, reconstruct	lf	1,355	0.35	0.40
Guard rail, standard steel	lf	20,811	2.80	2.75
remov	lf	2,400	1.00	1.15
Culv markers & guide posts	ea	126	8.00	7.00
Right of way markers	ea	28	8.00	7.00
Reference monuments	ea	62	8.00	11.00
Retain wall, met bin type, tp A	sf	907	6.00	5.75
tp B	sf	2,467	7.50	6.00
tp C	sf	1,347	7.75	7.00
tp D	sf	827	9.25	8.00
reconstruct	sf	486	5.00	5.75

Commence: 9-10-58. Complete: 250 working days.
Liquidated damages: $400/working day.

Road Gets Blotter Type Surfacing

This $80,548 contract to Weelborg Bros., Dell Rapids, S. D., is for 12.099 miles of 6 in. gravel base course with blotter type bituminous surface treatment, from South Dakota State Highway 10 at Eureka, to the North Dakota state line, an average of $6,657.33 per mile.

The award is 17.7% below the engineer's estimate, 2.3% below the second and almost 28% below the high of the seven bids.

Wm. Emerson, Aberdeen, S. D., is the consulting engineer. Emil Kotrous is resident engineer in charge of construction, at Selby, S. D., and H. C. Rempfer, State Highway Engineer at Pierre.

Subgrade width is 28 ft and blotter width 24 ft.

A royalty of $0.05 a cu yd, paid to both gravel and clay pit owners, is included in the unit prices for gravel bid by the contractors. Average haul of gravel is 3.4 miles and of clay binder 4.3 miles.

Work on this project will probably not commence until the spring of 1959.

"Predetermined" wage scale includes: roller operators, $1.60; spreader operators, $1.65; bulldozer operators, $1.60-$1.85; common laborers, $1.25.

Rail and truck transportation are accessible to the site.

The seven bids shaped up like this.

1C	Weelborg Bros., Dell Rapids, S. D.	$80,548
2	Dean R. Rounds, Rapid City, S. D.	82,417
7	Heggary Bros., St. Cloud, Minn.	111,339
EE	Wm. Emerson, Aberdeen, S. D. and South Dakota State Hwy Dept., Pierre, S. D.	97,819

Bids: 8-27-58 Items	Unit	Quantity	Unit Prices 1C	 2
Excavation, unclassified	cy	1,814	$0.20	$0.30
Water for compaction	Mgal	1,295.8	2.00	2.50
Ordinary roadway shaping	mi	12.099	20.00	100.00
Soil agg base crse, type 1	t	61,753	0.70	0.75
Bitum for primer	gal	99,389	0.15	0.14
blotter	gal	58,779	0.15	0.14
Blotter gravel	t	4,259	2.41	2.00
Rolling	hr	73	6.00	10.00

Completion schedule: 60 working days.
Liquidated damages: $40/day

4-D

WROUGHT IRON IN ROAD-BUILDING APPLICATIONS runs corrosion ragged

WHERE TO USE IT:

- drainage lines
- electrical conduit
- snow melting systems
- hand railings
- curb plates
- scuppers
- bridge decks
- service building piping
- pier protection
- lamp posts
- tie bars, dowels
- fasteners

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

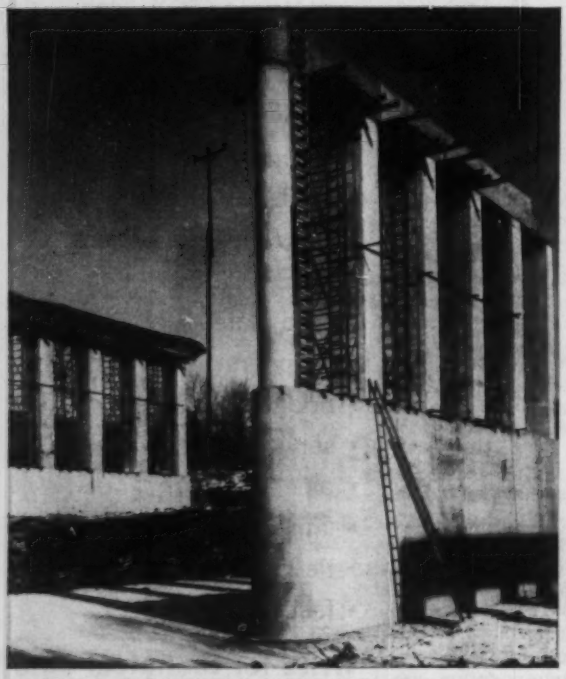
Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

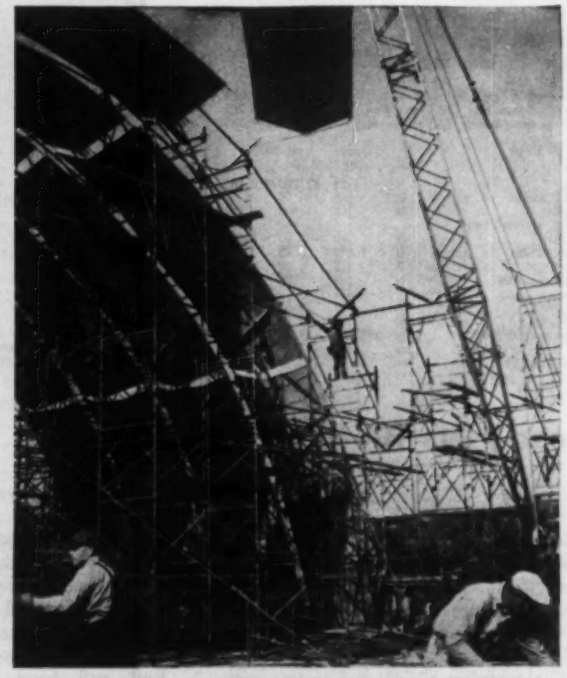
Shoring Methods...

A Picture Report on Efficient Ways to Shore Concrete . . . by Patent Scaffolding Co.

FAST METHOD MOVES SHORING WITH FORMS—Soaped sills, placed under shoring legs, provide fast movement of 960 sq. ft. sections of "Trouble Saver" Shoring with formwork, to succeeding drophead panels on this slab job at Kentile, Inc., So. Plainfield, N.J. Method uses only half the shoring (462 frames) and formwork usually required, and saves the contractor, Fred J. Brotherton, Inc., considerable time, equipment and costs. Each section is moved, as shown, to its new location in just 15 minutes.



EASY-TO-ERECT PIER SHORING—"Trouble Saver"® Steel Shoring, made with 3'-wide ladder frames, provides ample support for beams on several pier capitols on this bridge in Palmyra Township, Pa. Frames, spaced 3' apart, shore capitols 3'6"-wide by 4'-thick. Built-in ladders give workers quick access for forming and stripping. Willis, Paul & Proctor, general contractor. P.S. Co. offers engineering layouts specifically detailed for every job.



CORRUGATED BARREL ROOF SUPPORT—Support for this unusual corrugated, reinforced concrete roof is provided by "Trouble Saver" Shoring towers with 104 special V-shaped cradle frames. These units, designed by P.S. Co., were set on top of the shoring frames to conform to roof segments, which measure 10' 3 1/2" wide and 2'9" deep in cross section. Holy Trinity H. S., Trinidad, Colo. Platt-Rogers Constr. Co., gen. contr.

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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Oct. 16; Next, Nov. 13
- Wood Products, Glass, Explosives, Chemicals: Last, Oct. 23; Next, Nov. 20
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 30; Next, Nov. 27
- Wage Rates, Building Board, Lath, Insulation: Last, Oct. 30; Next, Nov. 27

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.35	$3.93	$3.60	$3.10r	$3.10r	$2.50fs	$2.18s	$2.33s	$1.65r	$1.75r	$0.175o	$0.21o	$14.50g
Baltimore	3.90s	3.80s	3.32s	2.80fs	2.80fs	2.25fs	2.85fs	2.90fs	2.05fs	2.00fs	.18s	.18s	13.10/13/60
Birmingham	4.23c	3.30cf	....	2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.65r	1.75r	.18	.18	13.55q
Boston	5.80ri	4.59s	4.67eim	3.00as	3.00as	3.00as	1.75as	1.85as	....	....	.23o	.275ao	15.00p
Chicago	4.13ag	3.87ag	3.90/3.95g	3.78fe	3.78fbe	4.13fbe	3.95fbe	3.95fbe	2.25fs	2.25fe	.25fe	.25be	13.50e
Cincinnati	4.68c	4.16c	4.18c	2.29fcu	2.34fcu	2.34fcu	2.64fcu	2.64fcu	1.89u	1.89u	.19o	.24ao	13.25qr
Cleveland	N.A. in C.L.	....	3.89fas	2.25as	2.10as	1.75as	4.50faf	4.50faf	3.45ftf	3.45ftf	....	.22f	14.65f
Dallas	3.75a	3.25a	3.63	2.65t	2.70t	1.90t	2.43	2.63	....	....	....	.27	12.20
Denver	4.79a	4.29a	4.79	1.90	2.05	1.20fb	....	3.35fz	....	....	.22	.245a	10.70
Detroit	4.25a	3.75a	3.72a	4.50fabe	4.50fabe	4.25fabe	3.75fas	3.75t	3.50t	3.50t	.24	.27a	14.40
Kansas City	4.23a	3.83a	4.10a	....	....	1.70fa	2.00fa	2.00fa	....	....	.22a	.26c	13.50
Los Angeles/	5.12ch	4.68ch	5.60c	2.56fat	2.76fat	2.41fat	2.41fat	2.46fat	....	....	.17fm	.255m	12.95hl
Minneapolis	4.42a	4.01a	4.08a	2.70fae	2.70fae	1.60fae	3.95fae	3.95fae	....	....	.19q	....	14.30f
Montreal	3.36fde	3.11fde	3.72fde	1.90fa	2.15fa	2.40fa	1.90fi	2.15fi	2.00i	2.00i	.20	.28f	10.80ek
New Orleans	4.06b	3.65b	3.85b	2.45b	2.45b	2.09bf	....	....	1.45	1.65t	.275r	....	14.00e
New York	4.65a	4.14a	3.69	....	....	3.20bk	3.10bl	3.10bl	....	....	.25n	.278b	17.40an
Philadelphia	4.57fa	4.16fa	3.61t	2.85fa	2.85fa	2.35fa	2.70t	2.80t	2.00	2.35	.25/.32	....	14/15d
Pittsburgh	5.65hjt	4.62hj	5.00hR	2.65faqs	2.65faqs	3.05faqs	2.00faqs	2.00faqs	2.20w	2.20w	.26r	.28r	15.80e
St. Louis/f	4.16/4.48c	3.78/4.08c	3.86/4.18c	3.25amr	3.10amr	2.40/3/10amr	1.65afr	1.75afr	....	....	.24t	.30fe	12.65/13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00c
Seattle	4.22fa	3.70a	4.40a	4.25fbm	4.25fbm	4.25fbm	4.50fbm	4.50fbm	....	....	.26s	.37cs	13.90j
Toronto	4.00an	3.84ad	4.00an	2.40	2.40	2.05	2.20	2.20	2.20	2.20	.26	.275c	15.25s

‡ Delivered. * Prices incl. dealers discount except as noted. / Add 4% sales tax. // Add 2% intrastate sales tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc. 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots fob yard. *k 100 bag lots *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days.

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e Less 2% disc. 10th *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *i Plus 3% mun. & prov. tax. *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q F.o.b. yard *s Less 5% disc. 15th. *t Less 2% disc. 10 days. *u Less 10¢ disc. 10 days. *v Less 5¢ disc. 10 days. *w Less 2% disc. 15 days. *x Incl. 35¢ del. charge.

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete. *e 5¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 18. *o Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 5% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex. 7 x 9 x 18. *u Less 5% disc. 10 days.

Ready MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more. *c 10-100 cy. brackets. *d 1-3 mi. zone add 15¢ for ea. add'l 1-mi zone. *e 2,000 lb comp. *f 2,500 lb. comp., less 1% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 6% mun. & prov. tax. *l 1:2¼:3½ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

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Charge for bags not included. For paper bags add 40¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45†	Buffington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.45†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.56†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Leslay, Pa	3.35†	Giant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alsen, N. Y	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of 1958.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

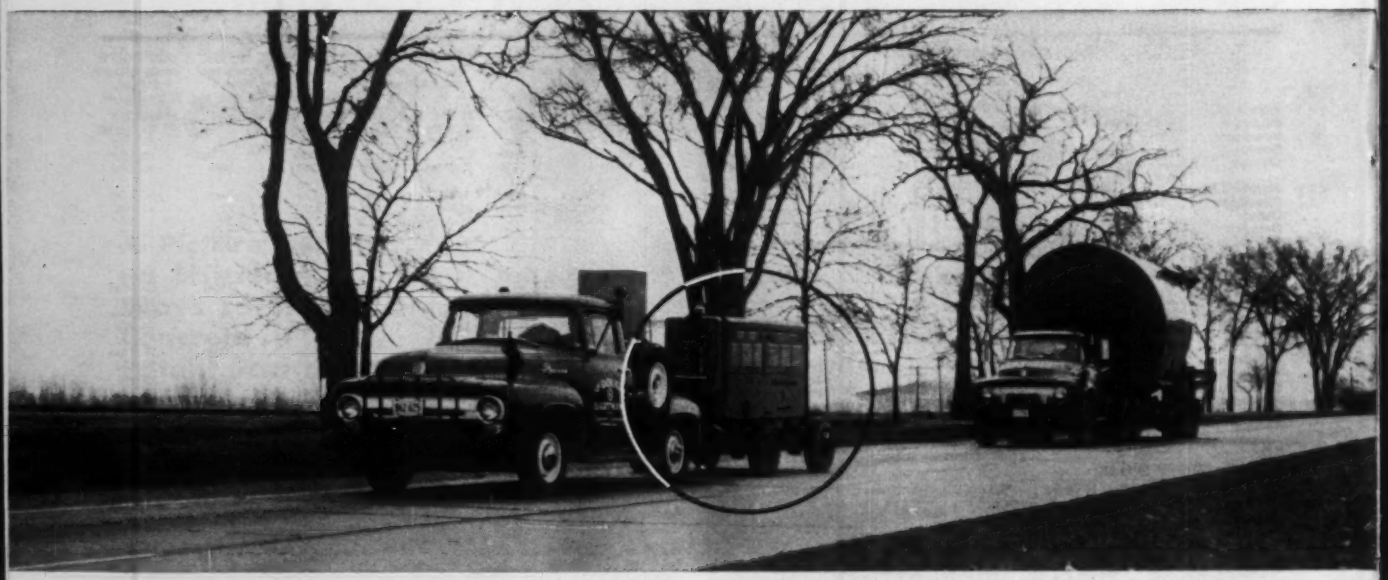
	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50S	$45.00S	$0.15S	$0.26S	$0.125PuS	$0.28PuS	$0.14S	$0.125S	$0.30S
Baltimore	150.00‡	.....	.....	23.00i	.....	.095i	0.185i	.10iuE	.19iuE	.10i	.105i	0.195i
Birmingham	.....	66.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00ap	46.00ap	22.00a	46.00a	.105aFu	.34aFu	.135aOR	.145OR	.235aGo
Chicago	150.00fa	90.00fab	3.95/4.00fai	21.20b	31.20b	20.40br	30.40br	.975buH	.1775buH	.080b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	89.50fdg	6.30g	25.00rA	.....	25.00rA	.....	.1115uAF	.....	.....	.1180xAG	.21AG
Dallas	e	40/75	e	26.30	45.30	.1116	.1944	29.85	51.40	.1080	.1116	.1944
Denver	.....	58.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	116.00	.....	33.05	.....	32.45s	.....	13.50l	.....	.1133	.....	.23
Kansas City	e	e	e	18.00cl	.....	18.00cy	.....	.0825cuJ	.....	.06c	0.125c	.....
Los Angeles/	e	.....	e	22.50dmz	.....	22.50dmz	.....	24.00dz K	.....	23.00dz	.1038j	.2038j
Minneapolis	.....	.....	3.73h	26.00	.....	26.00r	.....	0.115w	.....	0.105	.125f	.....
Montreal	e	e	e	32.50n	50.80n	.176n	.226n	18.70nuE	23.70nuE	.154n	.242na	.27na
New Orleans	.....	.....	.....	20.00e	.....e	20.00er	.....	.095ru	.....e	.065eB	.095eBL	.1905eB
New York	.....	.....	3.50f	20.99m	42.94m	20.99st	40.94st	9.61uF	19.01uF	.....	9.68u	19.11u
Philadelphia	175/185	110/120	4.06	24.00fU	.....	24.00 U	.....	.11uFU	.....	.105 U	.....	.....
Pittsburgh	60.00k	83.25fno	6.35n	31.40is	.....	31.40ur	.....	.1411uu	.....	.142V	.1411u	.....
St. Louis/f	.....	.....	.....	19.74f	.....	.1855f	.....	.0893fuM	.0918fu	0.165‡	.825Q	.30‡
San Francisco	.....	70.00	.....	24.50g	41.50g	24.50gkr	41.50gkr	24.50gN	43.00gN	23.25qrW	25.50yrX	.2063qX
Seattle	.....	.....	.....	26.00s	41.00s	26.50ss	.....	27.50 K	.....	23.25ksY	24.50ksX	46.10ksX
Toronto	.....	135.00	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216Z	.271Z

‡ Delivered. / Add 4% sales tax. // Add 2% intrastate sales tax.

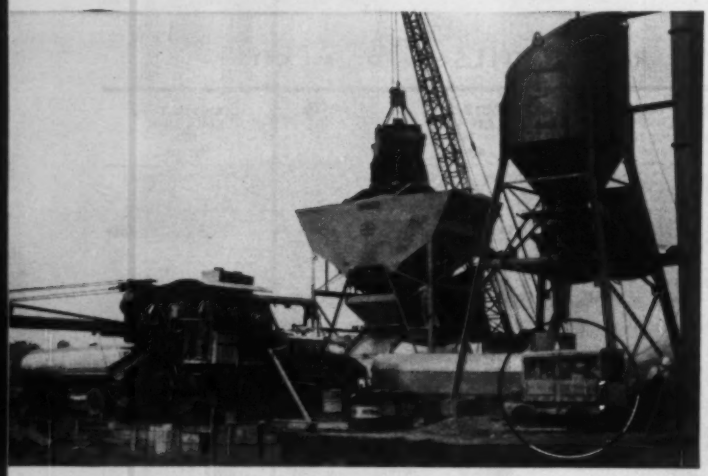
PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3½ x 8. *c 2¼ x 8½ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb tr. *g Less $1/Mdisc. 15th. *h 2" tr, 6 lb. *i 3 x 3 x 8½. *j 2½", 6 lb. tr. *k Used. *l Redshale. *m Pine; oak $6.57. *n Truck del. *o Less $1/M disc. 15 days.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 'penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-6 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *MC 1-5, RC 1-5, $0.0918. *N MC 3. *O Truckload. *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi. *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax.

Cat power saved these owners $1,300

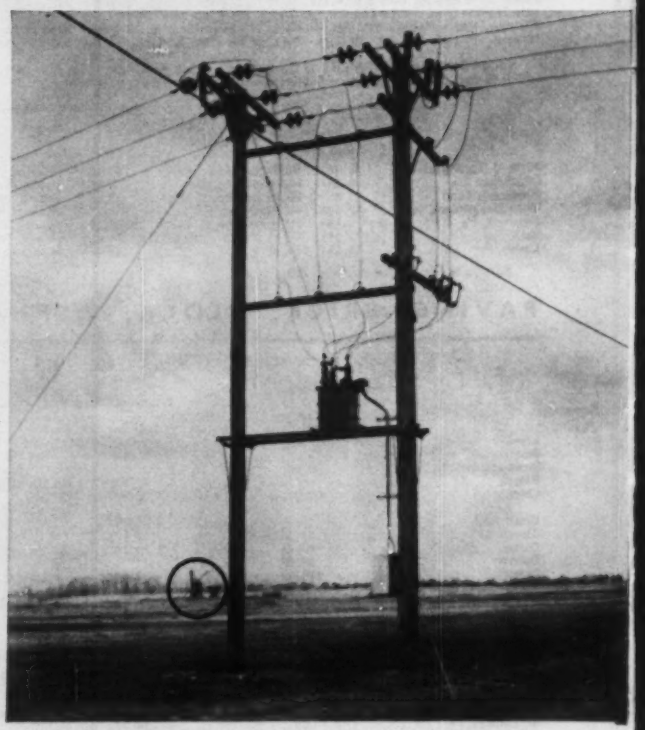


1 McDougal-Hartmann Co.'s, Heltzel Bin Hardy and Johnson Automatic Batching Plant follows their 40 KW Cat D315 Portable Electric Set to its fourth job site. Savings during the first year of ownership while moving them, alone have amounted to $3,900. Operational savings are not even included. The owners estimate that running in and hooking up to public utility power would have averaged at least $1,300 per move. An additional $1,200 was saved at the outset since the Electric Set would operate the plant's higher voltage electric motors which were supplied as original equipment.



2 At a previous job location in Sterling, Illinois, this unit produced 86.4 batches per hour for use on one of the firm's nearby road construction jobs.

Without portable power, it often requires the more common technique of setting up the batch plant along a railroad siding or right-of-way, bringing in materials by rail if the haul distance to the job is not excessive. Concrete specifications in some states limit the haul distance of mixed concrete due to the time element. All in all, Cat portable power saves operating time, cuts costs.



3 Many contracting companies with multi-state operations, such as McDougal-Hartmann, require power portability to avoid the frequent high cost and inconvenience of obtaining power in remote areas.

On their present job it would have necessitated stringing poles and wire from this power line to the plant location (in the circle). Instead, the highly mobile Cat Electric Set was rolled up alongside the batching plant, and hooked up with wall plug simplicity ready to go.

each time their batching plant moved

4 Performance and savings with this plant brought Mr. Jack Hartmann, Vice President (right), and Bud Moore, his C.D.E.S. (Caterpillar Dealer Engine Specialist), out to the job to plan a second batching plant installation. Satisfaction resulted in an order for a second identical Cat Electric Set for this contractor's expanding operations.

Mr. Hartmann remarked, "ABOUT ONE MORE MOVE AND OUR FIRST PORTABLE ELECTRIC SET WILL HAVE PAID FOR ITSELF IN SAVINGS FROM MOVES ALONE AND IN LESS THAN TWO YEARS. THAT WE LIKE TO SEE."

Engine Division, Caterpillar Tractor Co., Peoria, Ill., U.S.A.

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

5 The all-new, self-regulated generator for Cat Electric Sets is simple to operate. Voltage is adjustable from 5% above to 10% below nominal rating and regulated within 3½% of rated voltage. It has unsurpassed motor starting ability. Other performance features Mr. Hartmann liked were:

1. Low over-all cost per operating hour.
2. No down time due to power failure or engine failure.
3. No additional help required, due to the unit's simplicity and self-regulating standard equipment.
4. Advertised power produced and maintained.
5. His Caterpillar Dealer Engine Specialist, Parts and Service teams were on around-the-clock availability if anything went wrong. It didn't.

ENGINE POWER BY CATERPILLAR

If something has gone wrong with your present engine or it just won't produce in your excavator, crusher or other construction machinery, talk it over with your C.D.E.S. He can aid you profitably when repowering older machines or specifying engines for new equipment.

Engine Division, Dept. EN11
CATERPILLAR TRACTOR CO., Peoria, Illinois, U.S.A.

Send me more information about the new Caterpillar Portable Electric Sets. I understand that I am under no obligation.

☐ I would like more detailed information as I may be in the market for a Caterpillar Construction Engine.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., Augusta,
Me.—W. H. Hinman, Inc., North Anson, Me., CA $140,657 (5 bidders), b. conc. 0.459 mi. road, Rumford, FAP No. DF-02511(7), Oxford Co.,
Me.—Frank Rossi, Gardiner, Me., CA $114,986 (9 bidders), b. conc. 1.577 mi. road, FAP No. DF-014-1(8), Fryeburg. Bids Oct. 22. CD 10/14.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 10/21,
Mass.—Scavone Constr. Co., 38 Hope St., Worcester, Mass. LB $323,119 est. $386,975, relocation, reconstr. Section Rte. 20. UF-30(3), Brimfield;
Mass.—Rufo Constr. Co., 89 Adams St., Newton, Mass., LB $228,190 est. $263,265, wid'n. Section Northern Circumferential Hy. Rte. 128. DU-272 (32), Waltham, CD 10/8.

New England Dredge & Dock Co., 60 S. Water St. New Haven, Conn., LB $198,770 (2 bidders) placement of sand fill, Fairfield Beach, Proj. BI-FC-18B, FAIRFIELD, CONN. State P. Wks. Comr., 165 Capitol Ave., Hartford, Conn. Bids Oct. 22, CD 10/16.

Webb & Knapp Marine Corp., Union Ave., Bridgeport, Conn., LB $99,797 (3 bidders) placement of sand fill, Greenwich Point, Proj. BI-FC-20, OLD GREENWICH, CONN., State P. Wks. Comr., 165 Capitol Ave., Hartford, Conn. Bids Oct. 22, CD 11/14.

BUILDINGS—LB & CA

▲ Gilbane Bldg. Co., 90 Calverly St., Providence, R. I. CA $2,082,000. HOSPITAL WING, High Service Ave., NORTH PROVIDENCE, R. I. Our Lady of Fatima Hospital, High Service Ave., R.C. diocese of Providence, 34 Fenner St., Providence, R. I. Bids Oct. 15. CD 10/17, under LB.

T. Shannon & Sons, 502 Forbes St., East Hartford, Conn. Owner Builds, $100,000, 7 brick veneer WAREHOUSES, School St., EAST HARTFORD, CONN.

Rudford B. Anderlot, 7 Fenn Rd., Cheshire, Conn., Owner Builds, $490,000, 49 HOUSES, Apple Tree Hill WALLINGFORD, CONN. Pedersen & Tilney 111 Whitney Ave., New Haven, Conn., archts. CD 7/6/56.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Pa., Phila.—BA 11/10—Dpt. Procurement, City Hall Annex, Bids 2143-2149 (inclusive) constr., reconstr. sewer in various locations; Bid 2150, furnishing, installing chain link fencing, incl. gates and appurtenant work (Frankford Grit Chamber). Plans deposit $5. CD 5/21.

Pa., Phila.—BA 11/10—Dpt. Procurement, City Hall Annex, Bids 2142 cleaning and cement mortar lining and replacing line valve in steel and c.i. water lines in various sections of city. CD 3/22/46.

Pa., Phila.—BA 11/13—Dpt. Procurement, City Hall Annex, reconstr. deck and steel, masonry repairs, Bridge No. 258, 33 St. over Reading Co. at Thompson St., reconstr. deck Bridge No. 247, State Rd. over Pennypack Creek. exten. to aluminum railing on Bridge No. 248, Sanger St. over Roosevelt Blvd., traffic signal installation work various locations in city. CD 5/12.

Pa., Phila.—BA 11/13—Dpt. Procurement, City Hall Annex, repaving alleys and driveways and reconstr. retaining walls, repaving certain alleys and driveways, asphalt repaving; b. conc. paving, grading, asphalt paving and constr. retaining wall, bit. concrete paving and constr. retaining wall. CD 1/31/45.

Pa., Phila.—BA 11/14—Dpt. Procurement, City Hall Annex, Bid A-6073, dock dredging at city owned piers on the Delaware River. CD 11/12/52.

† Maryland—OFF-SITE UTILITIES—BA 11/19—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., off-site utilities for 16 family housing units, Special AAA Site W-54, Pomonkey. CD 3/30/56, under Public Buildings, under Maryland and Virginia.

HEAVY CONSTRUCTION—LB & CA

▲ Corbetta Constr. Co., 220 E. 42 St., New York, N. Y. CA Est. $3,500,000, general contract airline facility for overhaul of jet aircraft engines at New York International Airport, IDLEWILD, N. Y. Pan-American World Airways, 135 E. 42 St., New York 17, N. Y. Burns & Roe, Inc., 160 W. Broadway, New York, N. Y., engrs. CD 2/25/53.

Riggs Distler & Co., Inc., 1518 Walnut St., Phila., Pa. LB $80,503. plumbing and elec. work in addn. for basketball facilities at State Farm Show Bldg., HARRISBURG, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Oct. 22. CD 10/1.

Canova Bros., 5134 Navahoe St., College Park, Md., LB $77,344 (8 bidders), Contr. 2170 W&S, water main and sewer constr. Barlowe Rd., Allendale Dr., 81 Court, Burnside Rd., Greymont St., 82 Pl., 83 Ave., 83 Pl. and right of way, Palmer Park, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids Oct. 20. CD 10/15.

BUILDINGS—LB & CA

▲ Green Constr. Co., 274 Madison Ave., New York 16, N. Y., CA $1,213,000, 70 APARTMENT ANNEX to Melone Village, AUBURN, N. Y. Auburn Housing Auth., Melone Village, Auburn, N. Y. Beardsley & Beardsley, 64 South St., Auburn, N. Y., archts.

Ali Bldg. Constr. Co., 319 Spencer St., Elizabeth, N. J. CA Est. $350,000, 1 story, brick, masonry SCHOOL, Parish of Holy Rosary, ELIZABETH, N. J. Archdiocese of Newark, Elizabeth, N. J. Bids Oct. 9. CD 9/19.

SOUTH

HEAVY CONSTRUCTION—BA

† Fla., Homestead—BA 11/13—U. S. Eng., 575 Riverside Ave., Jacksonville, constr. sewer repair and pump station alteration, Homestead Air Force Base, ENG-08-123-59-16-B. CD 7/24.

HEAVY CONSTRUCTION—LB & CA

† W. H. Belanga Constr. Corp., 619 W. 25th St., Norfolk, Va. CA $589,924, rehabilitation Bldg. 114, Langley Air Force Base, IFB 44-600-59-10, LANGLEY, VA. Procurement Office, 836th Air Base Group, Langley Air Force Base, Va. CD 9/11.

Cate Paving Co., 1200 NE 7th Ave., Fort Lauderdale, Fla., CA Est. $75,000, street paving, Los Olas Subdivision, FORT LAUDERDALE, FLA. Eastern Properties, 915 E. Los Olas Blvd., Fort Launderdale, Fla.

BUILDINGS—LB & CA

▲ Gilbane Constr. Co., 90 Calverly St., Providence, R. I. CA Est. $1,000,000, 13 story TOWER OFFICE on top of ramp garage and store bldg., NORFOLK, VA. Rennert Corp., c/o S. L. Nusbaum & Co., Inc., 148 Granby St., Norfolk, Va. A. Ray Pentecost & Joseph B. Courtney, 21st St. at Colonial Ave., Norfolk, Va. and Lublin, McGaughy & Assocs., 220 W. Freemason St., Norfolk, Va., archts.

Reid & Hope, Suffolk, Va. LB $380,770, ELEMENTARY SCHOOL, SUFFOLK, VA. Suffolk School Bd., Suffolk, Va.

† M. B. Kahn Constr. Co., 1113 Blossom St., Columbia, S. C. LB $644,350 (5 bidders), addns., alterations to BLDGS. 1, 2, 4 and 5 at Veterans Admin. Hospital, COLUMBIA, S. C. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 21. CD 9/3.

▲ Daniel Constr. Co., 429 N. Main St., Bishopville, S. C. CA Est. $1,000,000. PLANT addns., EASLEY, S. C. Saco-Lowell Shops, Easley, S. C.

Singletary-Fowler Constr. Co., Swainsboro, Ga. CA Est. $100,000. MANUFACTURING PLANT, SWAINSBORO, GA. Emanuel Co. Development Corp., Swainsboro, Ga.

Rigdon-Hock Constr. Co., Homerville, Ga., CA $597,585, constr. Lowndes Co. HIGH SCHOOL, VALDOSTA, GA. Lowndes Co. Bd. Educ., Courthouse, Valdosta, Ga. Bids Sept. 18. CD 10/8.

▲ Cunningham-Limp Co., 3087 W. Grand Blvd., Detroit, Mich., CA Est. $5,500,000, seawater magnesium oxide PLANT, PORT ST. JOE, FLA. Michigan Chemical Co., St. Louis, Mich. CD 7/16.

▲ E. G. Westmoreland, 3552 Oak Rd., Memphis, Tenn., Owner Builds, $1,250,000. MOTOR HOTEL, ST. PETERSBURG, FLA. C. Dale Dykema, 16901 Gulf Blvd., Redington Beach, Fla., archt.

Jehle Bros., 1616 Mt. Meigs Rd., Montgomery, Ala., LB $365,384. SHOPPING CENTER addn., BIRMINGHAM, ALA. Byrd Real Estate Co., 322 N. 21 St., Birmingham, Ala.

▲ F. W. Owens Co., 119 N. 5, Louisville, Ky., LB $1,436,000 (4 bidders), 4 story block OFFICE, Chestnut St. between 6th St. and Armory Pl., LOUISVILLE, KY. Standard Gravure Corp., 525 W. Broadway, Louisville 1, Ky. CD 10/3.

Brownlee-Kersterson Constr. Co., 2437 Henson Rd., Knoxville, Tenn. CA $559,516. SHOPPING CENTER, KNOXVILLE, TENN. Western Plaza Shopping Center, c/o David B. Liberman, archt., 605 Walnut St. N.W., Knoxville, Tenn. CD 9/9, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ind., Fort Wayne—BA 11/12—Bd. P. Wks., 5,169 ft. 24 in. and 171 ft. 15 in. tile Junk Ditch sanitary sewer to serve area bounded by St. Marys River, Taylor St., Ardmore Ave., and Covington Rd. $250,000. Edward Green, city engr. CD 12/20/56.

O., Cincinnati—BA 11/27—Murphy Builders, Inc., 7945 Hamilton St., Mt. Healthy, concrete paving, sewer-water lines for 72 lot home development, off Paddison Rd. $135,000. Edw. Niemeier, 4484 Harrison Ave., Cincinnati, engr. CD 5/28.

BUILDINGS—BA

Ill., Chicago—SCHOOL—BA 11/17—Bd. Educ., 228 N. LaSalle St., 1 and 2 story, rein. con. school, 70 St. and Dante Ave. $520,000. Childs & Smith, 20 N. Wacker Dr., Zone 6, archts. CD 8/2/57.

Ind., Indianapolis—EMPLOYEES—BA 11/18—Comrs., Marion Co. Courthouse, first unit employees bldg., Marion County Home, Julietta. Plans deposit $25. Boyd E. Phelps, Inc., 711 K of P Bldg., archt-engr. CD 1/23.

O., Piqua—GARAGE—BA 11/18—Pioneer Rural Electric Cooperative, Piqua, garage, U.S. 36 east, $200,000. CD 4/5/49, under Unclassified, Ohio.

▲ O., Cincinnati—SCHOOL—BA 11/25—Bd. Educ., 608 McMillan St., Vine St. Elementary School. $1,000,000. Plans deposit $50. CD 9/18/57.

▲ Ill., Oak Lawn—HOSPITAL—BA 12/1—Evangelical Hospital Assn., 5421 S. Morgan St., Chicago, 4 story, 170 x 220 ft. concrete, brick Christ Community Hospital, $4,500,000. Burnham & Hammond, 53 W. Jackson Blvd., Chicago, Zone 4, archts. CD 6/12.

HEAVY CONSTRUCTION—LB & CA

B. J. Constr., Inc., 134 Pleasant Ridge, Fort Mitchell, Ky., CA $96,000, est. $100,000, concrete paving, sewer water lines for new street, Fairfax, CINCINNATI, O. Chesley Dev. Co., 5945 Ridge Ave., Cincinnati, O. Ed. Niemeier, 4484 Harrison Ave., Cincinnati, O., engr.

Edgar Mathias, 3518 Epworth Ave., Cincinnati, O. Own Forces, $138,000, concrete paving, sewer-water lines for 80 lots at Rybolt and Wessling Rds., CINCINNATI, O. CD 5/29.

W. L. Harper Co., 2910 Highland, Norwood, O. CA $226,000, concrete paving, sewer-water lines 80 lots, off Compton Rd CINCINNATI, O. Murphy Homes, Inc., 7945 Hamilton Ave., Mt. Healthy, O. Awarded Oct. 21, CD 7/17.

W. L. Harper Co., 2910 Highland, Norwood, O., CA $315,000, est. $275,000, concrete paving, sewer-water lines for 1,500 lot extens. of Pippin Rd. subdivision, first section, MT. HEALTHY, O. Northbrook Homes, 9579 Pippin Rd., Mt. Healthy, O. Awarded Oct. 20. CD 8/11.

▲ Roy C. Clark, 804 E. Chicago Ave., East Chicago, Ind., CA $854,705, (5 bidders), Div. B, 2 storm water pump stations, tray screens and storm water pump addns. to existing pump station; CA $964,261, (6 bidders), Div. A, sewage treatment plant, new admin. bldg. and control bldg., 3 sludge digesters, EAST CHICAGO, IND. Bd. Sanitary Comrs., 5200 Indianapolis Blvd., East Chicago, Ind., Grand total $4,092,753. Bids Oct. 7, awarded Oct. 21. CD 10/14, under LB;
T. F. Cloghessy Inc., 4914 Calumet Ave., Hammond, Ind., CA $857,802, (3 bidders), Div. C, Sec. 2,

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West

PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

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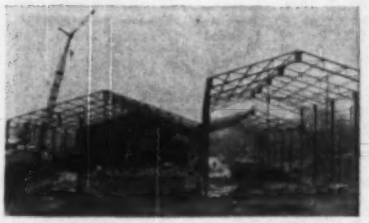
SWISS-LOK Tubular Building Frames offer these exclusive advantages:

Vastly cut erection time, crane service and labor costs
No welding, cutting, riveting or bolting at the site
One-third less weight without strength sacrifice



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Using the patented SWISS-LOK, all structural parts slip together quickly, providing a rigid structure that meets all A.I.S.C. requirements. The SWISS-LOK "keystone" permits wide spans without center columns.

The rigid-type truss chords parallel the roof slope, providing more overhead space for materials movement and storage.

All new, tested pipe is used exclusively in SWISS-LOK structures.

All structural frame members can be hauled by trailer truck, providing fast delivery, convenient spotting and reduction of handling.

SWISS-LOK structural framing is independent of roofing or siding. Any type may be used and standard wall tying and sheet metal fastening are applicable. There is no reliance upon wall or roof construction for support, alignment or rigidity.

SWISS-LOK structures are applicable to any style building — industrial, warehouse, institutional, public or commercial. For descriptive, illustrated literature write:

SWISS FABRICATING, INC.
Office and factory
Camp Horne Road, Pittsburgh 2, Pa.

11,600 ft. 84 to 24-in. concrete pipe; 1,650 ft. vitr. clay pipe 8 to 18-in. storm sewers, Marktown Sewer Dist., (East Chicago, Ind.);
Samocki Constr. Co., 3580 Penn Ave., East Chicago, Ind., CA $1,415,985, (3 bidders), Div. C, Sec. 5, 1,050 ft. c.i., 22,000 ft. 24 to 72-in. concrete pipe, Gunnite 6,100 ft. 96 to 72-in. pipe storm sewer and force mains, (East Chicago, Ind.).

Herlihy Mid-Continent Co., 407 S. Dearborn St., Chicago, Ill., CA $549,341, grade separation, 885 ft. precast prestressed deck girder bridge; 4 lane, concrete piers, 91 St. and South Route Expressway, CHICAGO, ILL. Bd. Comrs. Cook Co., Cook Co. County Bldg., Chicago 2, Ill. Awarded Oct. 21. CD 10/6, under LB.

▲ Standard Paving Co., 308 W. Washington St., Chicago 6, Ill., CA $1,196,697, 10 in. c. conc., paving South Park Ave. Dixie Hy. to 159 St., 42 ft. wide, 45 ft. precast, prestressed concrete span bridge Thornton Twp. CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. CD 10/6, under LB.

Paolo Salce Co., 7940 W. Grand Ave., Elmwood Park, Ill. CA $845,558, channelizing medians (mesh type) at various locations, CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. CD 10/6, under LB.

BUILDINGS—LB & CA

▲ Edgar Mathias, 3518 Epworth Ave., Cincinnati, O. Own Forces, $1,750,000 80 one floor, bsmnt., brick HOUSES, Rybolt and Wessling Rds., CINCINNATI, O. Ed. Niemeier, 4484 Harrison St., Cincinnati, O., engr. CD 5/28.

▲ Murphy Homes, Inc., 7945 Hamilton Ave., Mt. Healthy, O. Own Forces $2,750,000, 1½ story, bsmnt., brick HOMES on street off Compton Rd., CINCINNATI, O. Edward Niemeier, 4484 Harrison St., Cincinnati, O., engr. CD 7/17.

▲ Northbrook Homes, 9579 Pippin Rd., Mt. Healthy, O. Own Forces, $1,740,000 first sect. 174 one floor, prefabricated, bsmntless HOUSES, Pippin Rd., MT. HEALTHY, O. Ed. Niemeier, 4484 Harrison St., Cincinnati, O., engr. CD 8/11.

Repp & Mundt, Columbus, Ind., CA Est. $93,000, FACTORY addn. to make metal household furniture, COLUMBUS, IND. Hamilton Mfg. Corp., Columbus, Ind. CD 8/27/54.

Wm. E. Schweitzer Co., 2207 Dodge, Evanston, Ill., CA $600,000 HOSPITAL addns., SW corner Dempster and Western Ave., EVANSTON, ILL. Lutheran Deaconess Home & Hospital of Chicago, 1138 N. Leavitt St., Chicago, Ill. Burnham & Hammond, 53 W. Jackson Blvd., Chicago, Ill., archts.

Mayfair Constr. Co., 5660 N. Kedzie Ave., Chicago, Ill., CA $768,567, 1 and 2 story, 180 x 289 ft. brick, 1 shaped Crerar-King SCHOOL, Lexington St. and Campbell Ave., CHICAGO, ILL. Bd. Educ., City of Chicago, 228 N. LaSalle St., Chicago, Ill. CD 10/10, under LB.

▲ Chalmers Co., 10033 S. Central Ave., Oak Lawn, Ill. Own Forces $1,500,000, 100 HOMES, west of Cherry Hills, FLOSSMOOR, ILL. A. J. Del Bianco, 5501 W. Irving Park Rd., Chicago, Ill., archt.

▲ Darin Armstrong, 2041 Fenkell Ave., Detroit, Mich., CA $1,224,269, general constr. Northwest JUNIOR HIGH SCHOOL, ANN ARBOR, MICH. Bd. Educ., 1220 Wells, Ann Arbor, Mich. Bids Sept. 24, CD 8/25; J. A. Dart, P.O. Box 151, Mason, Mich., CA $492,200 mechanical work for Junior High School (Ann Arbor-Mich.).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ Colo., Denver—BA 11/12—Bd. Water Comrs., 144 W. Colfax Ave., basins one and two Hillcrest Reservoirs. $1,250,000. Extended date. John Burgess, 144 West Colfax, ch. engr. CD 10/9.

Okla., Oklahoma City—AIR BASE IMPROVEMENTS—BA 11/13—U. S. Eng., P.O. Box 61, Tulsa, perimeter fence, Tinker Air Force Base, ENG-34-066-59-20. $100,000. CD 9/20.

† Texas—BA 11/14—Soil Conservation Service, Dpt. Agriculture, H. R. Smith, Head, Admin. Services Section, 1st National Bank Bldg., P. O. Box 417, Temple, constr. floodwater retarding structures (flood prevention program) consisting earthfill embankments and appurtenances on Chambers Creek of Trinity River, Sites 8 and 9 located near Midlothian. Ellis Co. Inv. SCS 42-TX-59, Sites 8 and 9.

▲† Arkansas—BA 12/4—U. S. Eng., 300 Broadway, Little Rock, hydraulic turbines, Units 5 and 6, Bull Shoals Powerhouse White River, CIVENG-03-050-59-16. CD 9/22.

BUILDINGS—BA

Mo., Columbia — GREENHOUSES, etc. — BA 11/18 — Curators of University of Missouri, 116 Jesse Hall Columbia, greenhouses and headhouse at University of Missouri. Plans deposit $25. Hellmuth, Obata & Kassabaum, Inc., 315 N. 10th St., St. Louis 1, Mo., archt. CD 2/1/56.

▲ Wyo., Powell—SCHOOL—BA 11/19—Powell High School Dist., 1 story, structural steel frame, concrete, brick high school. $1,700,000. Plans deposit $50. Cushing, Terrell & Assocs., 1333 Airport Rd., Billings, Mont., archts. CD 5/29.

† Tex., Amarillo—ARMY RESERVE TRAINING CENTER —BA About 11/25—U. S. Eng., Box 61, Tulsa 2, Okla. Army Reserve Training Center. $260,000. CD 9/25.

HEAVY CONSTRUCTION—LB & CA

McLean-Astleford, 7701 Harriet Ave., Minneapolis, Minn. CA $892,800, roadways and utilities, railroad track work, sewers and water supply, concrete and bit. pav-

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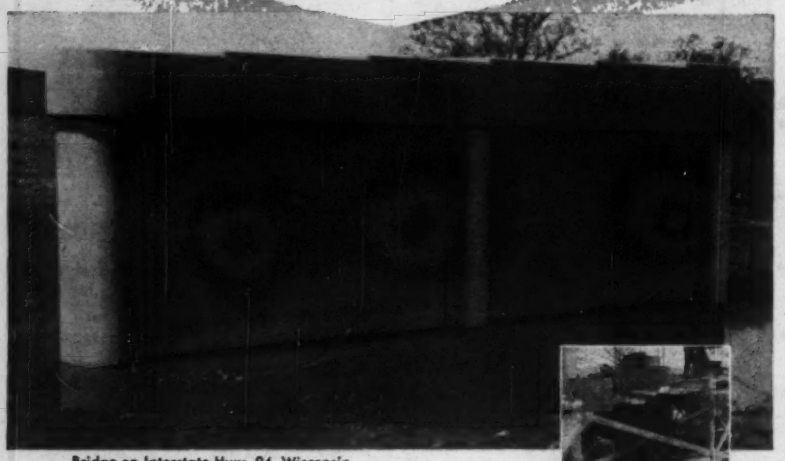

Bridge on Interstate Hwy. 94, Wisconsin. Tri-State Construction Co., contractors. Wisconsin Highway Dept., designers.

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ing, etc. for Terminal, DULUTH, MINN. Seaway Port Auth. of Duluth, 903 Alworth Bldg., Duluth, Minn. Bids Oct. 15. CD 10/20, under LB.

MISSOURI—State Hy. Comn., State Office Bldg., Jefferson City,

Giesler Bros. Constr. Co., Inc., 943 Grand Ave., Perryville, Mo., CA **$99,278**, graded earth, gran. surf. 10.404 mi. Ripley Co. Bids Sept. 24. CD 9/5.

▲ **KANSAS**—State Hy. Comn., Kansas City,

J. A. Tobin Constr. Co., 3701 Rainbow Blvd., Kansas City, Kan., CA **$1,153,908**, concrete paving 3.023 mi. beginning on Johnson-Wyandotte Co. line, SP 35-46 I-35-3 (16) 227 Pts. I & II, Johnson Co. Bids Oct 9. CD 10/15, under LB.

King Constr. Co., Hesston, Kan., LB **$598,043**, est. $709,439 (6 bidders), sewage treatment facilities, incl. pump house, clarifiers, chemical storage, etc., NEWTON, KAN. City, City Hall, Newton, Kan. Bids Oct. 14. CD 9/16.

TEXAS—State Hy. Comn., Austin,

cancelled bids to have been opened Nov. 13, base, hot mix b. conc. and 5 grade separations 5.99 mi. Hy. IH 35, Proj. I 35-4 (11) 346, McLennan and Hill Counties. CD 10/23.

▲† **Cosmo Constr. Co.**, 6911 Peerless St., Houston 21, Tex. LB **$1,389,760**, est. $1,400,548, portion East Embankment, McGee Bend Dam, Angelina River, ENG-41-443-59-7, TEXAS. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 23. CD 10/1.

Panola County, Carthage, Tex. Owner Builds. **$77,500**. general road imprvs., CARTHAGE, TEX. CD 10/16/57

City, City Hall, Cleburne, Tex. Owner Builds. **$75,000**. some storm sewer imprvs., CLEBURNE, TEX. CD 12/25.

Walter M. Mischer Co., 705 Holmes Rd., Houston, Tex. LB **$61,116**, open drainage imprvs., FREEPORT, TEX. City, City Hall, Freeport, Tex. Bids Oct. 10. CD 9/6

City, City Hall, Grand Prairie, Tex. Owner Builds. **$75,000**, some open drainage, GRAND PRAIRIE, TEX. Jerry Fontaine, c/o owner, city engr.

City, City Hall, Grand Prairie, Tex. Owner Builds. **$50,000**. water lines replacements, repairing, GRAND PRAIRIE, TEX. Jerry Fontaine, c/o owner, city engr. CD 10/10/57.

Elder Constr. Co., Box 14146, Houston, Tex. LB **$335,525**, Proj. 2, Lockwood area sanitary sewers (Fitch St., Hirsch and Friendly Rds. and Parker Rd.) HOUSTON, TEX. City, City Hall, Houston, Tex. Bids Oct. 8. CD 1/29.

▲ **WYOMING**—State Hy. Comn., J. R. Bromley, supt., Cheyenne,

Wyo.—**Big Horn Constr. Co.**, Sheridan, Wyo., CA **$1,025,253**, grade, drain, misc. work 4.862 mi. 4-lane divided highway on Laramie-Cheyenne Road, Proj. No. I-80-6(8)354, Sec. II, Laramie Co.;

Wyo.—**Wilson Bros.**, Cheyenne, Wyo., CA **$298,870**, grade, drain, and misc. work 3.206 mi. 4-lane divided highway on Laramie-Cheyenne Road, Proj. No. I-80-6 (8)354, Sec. I, Laramie Co.;

Wyo.—**Huntley Constr. Co.**, Rock Springs, Wyo., CA **$177,943**, grade, drain, SMS, base, surf. treatment (inv. Pen. type) and misc. work on 3.356 mi. Mountain View-Lone Tree Road, State Proj. SC-CFM 4747, Uinta Co.;

Wyo.—**Carlson-Lien Co.**, Deadwood Rd., Rapid City, S. D., CA **$407,610**, plant mix, shoulder seal, and cover aggregate and misc. work 17.28 mi. of Gillette-Moorcroft Road, Proj. No. DF-008-2(1) and F-008-2 (2), Campbell Co.;

Wyo.—**Chas. M. Smith**, Thermopolis, Wyo., CA **$152,004**, grading, draining, 1 bridge consisting of 4 continuous riveted plate girder spans and misc. work on 1.32 mi. of Lucerne-Black Mountain Road, Proj. No. S-0902 (1), Hot Springs Co. Grand total $2,061,680. Bids Oct. 23, awarded Oct. 24. CD 10/17.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,

Pioneer Constr. Co., 29 Lane and Hy. 96, Pueblo, Colo. CA **$257,336**, est. $200,000. asph. surf. 6.007 mi. State Hy. No. 368 from Carmel School Northwest, Colo. Proj. No. S 0088 (4), Rio Grande, Conejos and Alamosa Counties. Bids Oct. 21. CD 10/13.

Thompson Pipe & Steel Co., 3001 Larimer, Denver, Colo., CA **$662,165**, est. $700,000, high pressure Conduit No. 28 for furnishing 16,000 ft. 84 in. diam. steel or concrete pipe from Hillcrest north on Monaco, DENVER, COLO. Bd. Water Comrs., 140 West Colfax, Denver, Colo. Bids Oct. 16. CD 10/21, under LB.

BUILDINGS—LB & CA

▲ **Johnson, Drake & Piper, Inc.**, Baker Bldg., Minneapolis, Minn., CA **$4,386,000**. Glenwood Homes: 278 DWELLING UNITS, Bryant and Emerson Aves. north from Olson Hy. to Glenwood Ave., MINNEAPOLIS, MINN. Minneapolis Housing & Dedevelopment Auth., Metropolitan Bldg., Minneapolis, Minn. Bids Sept. 11. CD 9/16, under LB.

John Larson Co., Bismarck, N. C., CA **$813,000**, FIELD HOUSE, AUDITORIUM-STADIUM and PHYSICAL EDUCATION BLDG. at Moorhead State College, MOORHEAD, MINN. State Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Oct. 14. CD 10/20, under LB.

Corpus Christi Catholic Church, 1448 Cleveland Ave. N., St. Paul, Minn., rejected bids Sept. 24, 62x220 ft. 10-classroom school addn., 2 story, bsmt., 35x66 ft. convent, 1 story, 29x29 ft. chapel, County Rd. B and Fairview Ave., ST. PAUL, MINN. Battenburg, Townsend, Stolte & Comb, 1437 Marshall Ave., St. Paul, Minn., $349,000. archts. New bids Oct. 30. $375,000. LB CD 10/1, under LB.

▲ **Millstone Constr. Inc.**, 8510 Eager Rd., Brentwood 17, Mo., LB $1,023,000 (4 bidders), Proj. MO-23-CH-38(D) Unit C, 2 story CAFETERIA, incl. DINING ROOM, LOUNGE, SNACK BAR, etc. east of Big Bend Blvd. between Forsyth and Wydown Blvds., ST. LOUIS,

MO. Washington University, Lindell and Skinker Blvds., St. Louis 5, Mo. Bids Oct. 22. CD 10/14.

Benson Co., 3316 Sul Ross St., Houston, Tex. CA $175,000. PLANT FACILITIES, incl. small office, HOUSTON, TEX. Milwhite Mud Sales Co., M&M Bldg., Houston, Tex. Walter P. Moore, 2 Pinedale St., I. A. Naman & Assocs., 3305 Montrose Blvd., Houston, Tex., engrs. CD 4/4/57.

▲ **Hubbard Constr. Co.**, 1507 Delano St., Houston, Tex. LB $1,903,559 Base Bid, Waltrip SENIOR HIGH SCHOOL, Elias Blvd. and 34th St., HOUSTON, TEX. Ind. School Dist., 1300 Capitol St., Houston, Tex. Bids Oct. 21. CD 9/12.

Guido Bros. Constr. Co., 627 W. Martin St., San Antonio, Tex. CA $575,000, BOWLING CENTER at Goliad Rd. and Blackwood St., SAN ANTONIO, TEX. Goliad Bowling Center, Joe Barshop & Assocs., 1500 S. Zarzamora St., San Antonio, Tex. CD 5/26, under CA.

Carney Constr. Co., P. O. Box 604, Greeley, Colo., LB $277,099, est. $250,000, 1 story, 23,000 sq. ft. WAREHOUSE and OFFICE, BRIGHTON, COLO. Union Rural Assocs., 139 N. Main, Brighton, Colo. Ramsey & Reeves, 882 S. Lipan, Denver, Colo., archts. Bids Oct. 17. CD 6/6/57, under Unclassified, Colorado.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 12/16—U. S. Eng., 1209 8th St., Sacramento, main dam and appurtenances Government Camp, for Terminus Proj., Kaweah River, Tulare Co., rolled earthfill type and aux. dam with rock fill outer slopes, 6,800,000 cu. yd. excav. from borrow, 1,300,000 cu. yd. compacted impervious fill, 4,300,000 cu. yd. compacted pervious fill, 1,500,000 cu. yd. random rock fill, 1,900,000 cu. yd. unclassified excav., Spec. 2382, ENG-04-167-59-1. $10,000,000. CD 9/23.

† **California**—BA 1/14—U. S. Eng., 180 New Montgomery St., San Francisco, constr. stone breakwater, Half Moon Bay, vicinity of Princeton, San Mateo Co., ENG-04-203-59-53B. Extended date. CD 9/22.

BUILDINGS—BA

Calif., Patton—ADMINISTRATION—BA 11/19—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 3 story, about 32,000 sq. ft. administration bldg. addn., incl. subsurface utilities and storm drainage, paved road and sidewalk areas and alt. contagious part of existing bldg. at Patton State Hospital, W.O. 4007GC-47. $571,400. Plans deposit $50.

Calif., Riverside—GYMNASIUM, etc.—BA 11/19—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 1 story, 18,580 sq. ft., brick, steel gymnasium and 3,260 sq. ft. steel frame arcade adjoining bldg. at California State School for the Deaf, W.O. 4005GC-40. $350,000. Plans deposit $50. CD 1/9.

Calif., San Luis Obispo—HOME ECONOMICS, etc.—BA 11/19—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 1 story total floor area 43,500 sq. ft. home economics wing and 2 story mathematics wing and cottage at California State Polytechnic College, W.O. 4005GC-27. $932,500. Plans deposit $100. CD 7/24/57.

HEAVY CONSTRUCTION—LB & CA

UTAH—State Rd. Comn., State Capitol, Salt Lake City, **Allred & Mitchell Constr. Co. & Fisher Constr. Co.**, Altamont, Utah. CA $148,855, one steel 125.9 ft. bridge on U. S. 6 and 50 over the Grassy Trail Creek, FAP DF 028-2(2) Carbon Co. CD 9/22.

† **OREGON**—Bureau P. Rds., Morgan Bldg., 720 S.W. Washington St., Portland, bids opened 10/20, **Chapoell Logging Co.**, Box 397, Canyonville, Ore. LB $172,513, est. $201,362 grade 2.858 mi., constr. 2 bridges Dumont Creek Rd., Douglas Co. CD 10/10.

▲† **O.K. Mittry & Sons**, 15905 S Broadway, Gardena, Calif. Ca $1,321,341 earthwork, structures and surf. in relocation of Trinity County Rd., Rush Creek to Stoney Creek, Trinity River Division, Center Valley Proj. Trinity Co. Spec. DC 5097 CALIFORNIA. Bureau Reclamation, Dpt. Interior, Fulton and Marconi Aves., Sacramento, Calif. Bids Sept. 25, awarded Oct. 22. CD 10/1 under LB.

† **Frank M. Crane**, 4 Banker Dr., Ukiah, Calif. CA $82,376. comfort station, Russian River Reservoir Proj. near Ukiah, Mendocino Co., Eng-04-203-59-36, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. CD 9/23.

Alameda County Plumbing Co., 15773 E. 14th St., San Leandro, Calif. CA $682,000., install copper waterline at Washington Manor Park SAN LEANDRO, CALIF. City, City Hall, San Leandro, Calif. awarded Oct. 6 CD 10/7. under LB.

† **Kul-Ber Constr. Co.**, 1305 W. 10th St., Merced, Calif. CA $130,870. maintenance of family housing, Contr. No. AF 04 (609) 523 (IFB 04-609-59-12) Geroge Air Force Base, VICTORVILLE, CALIF. Headquarters, 831st Air Div. (TAC) U.S. Air Force, George Air Force Base, Victorville, Calif. CD 8/27/56.

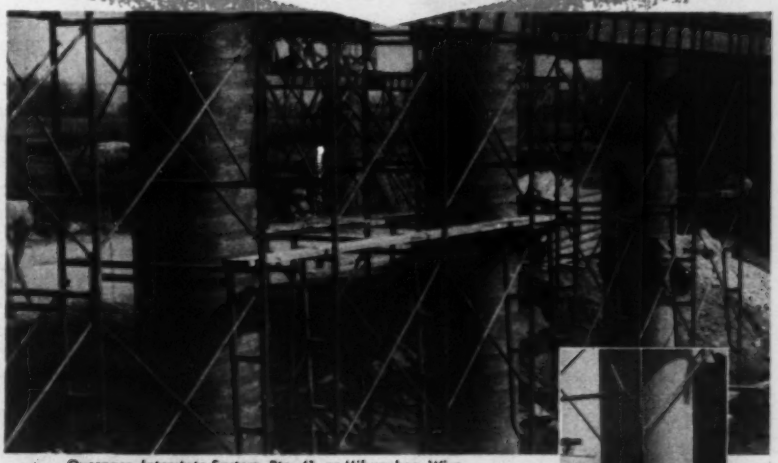
BUILDINGS—LB & CA

▲ **E. Carl Schiewe**, 1024 N.E. Davis St., Portland, Ore. CA $1,111,343, remodel Jefferson HIGH SCHOOL, PORTLAND, ORE. School Dist. No. 1, 620 N.E. Halsey St., Portland Ore. Awarded Oct. 20. CD 10/16 under LB.

▲ **Lohman Bros.**, 1449 S. San Pedro St., Los Angeles 15, Calif. LB $1,782,370 (5 bidders) mechanical work for 9 story STATE OFFICE BLDG. and 7 story PARKING GARAGE, W. O. 3848 GC-3 and 4001 GC-7, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Oct. 22. CD 9/26.

(Continued on page 110)

Smooth, continuous concrete surface on these piers



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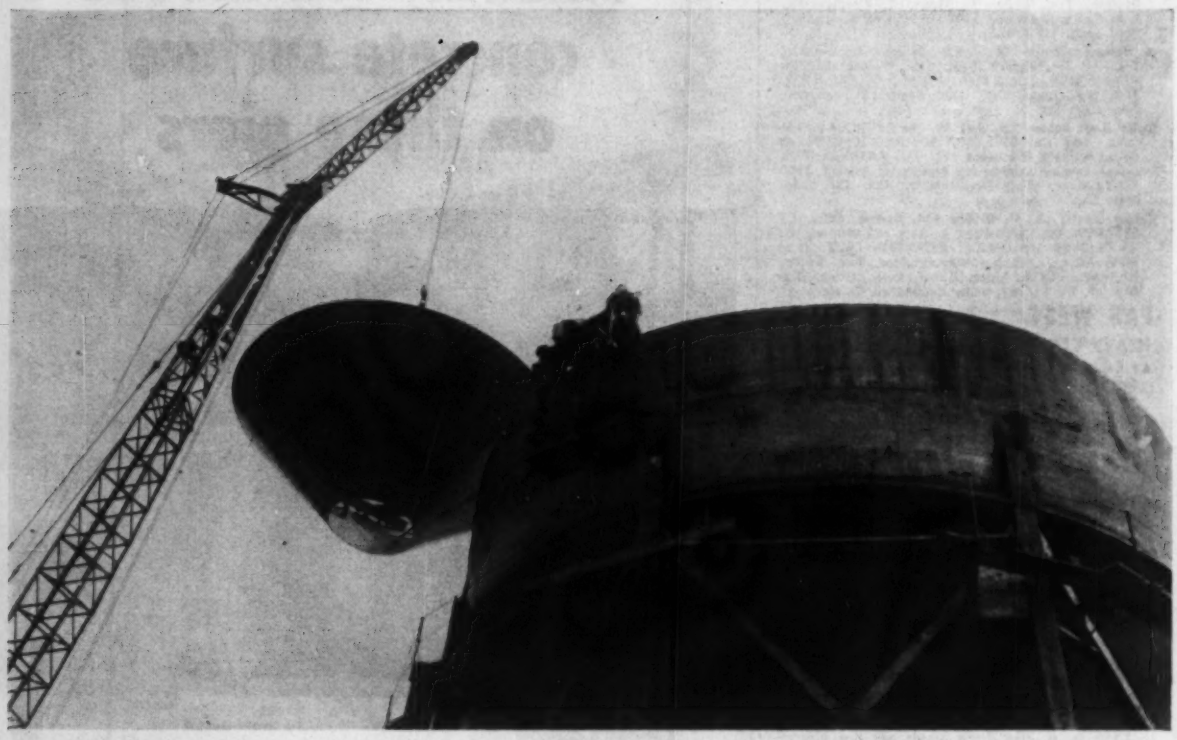

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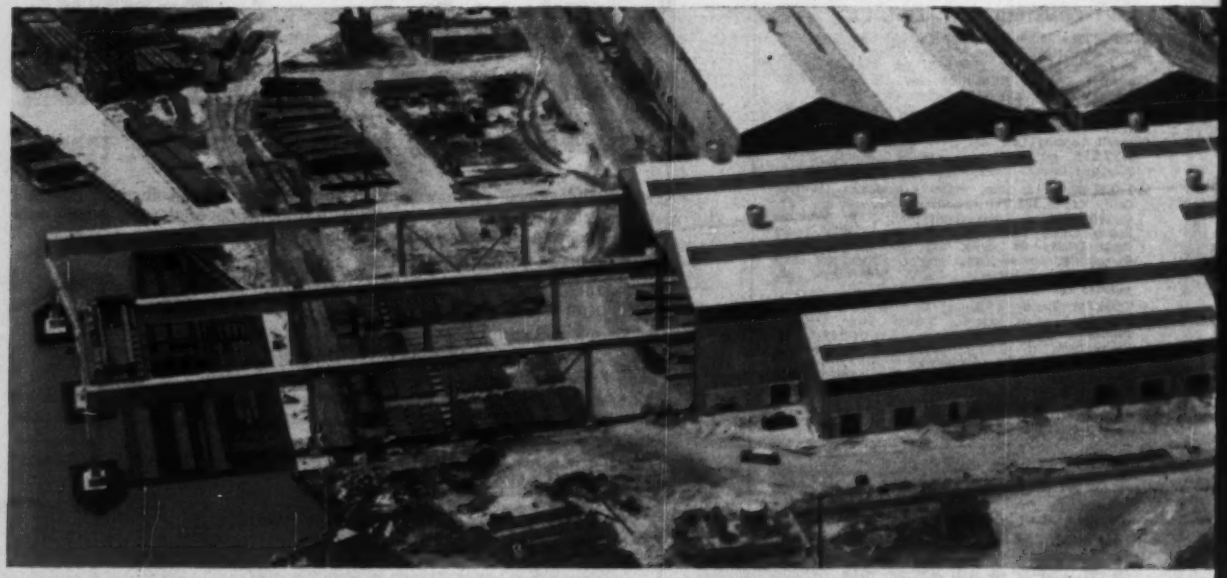

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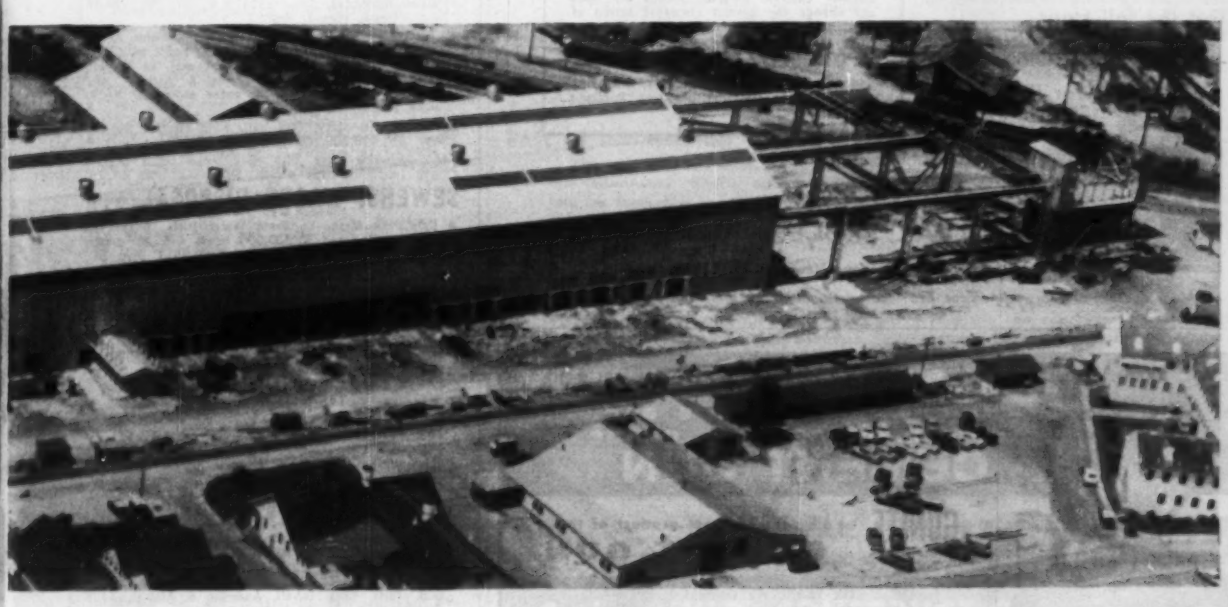

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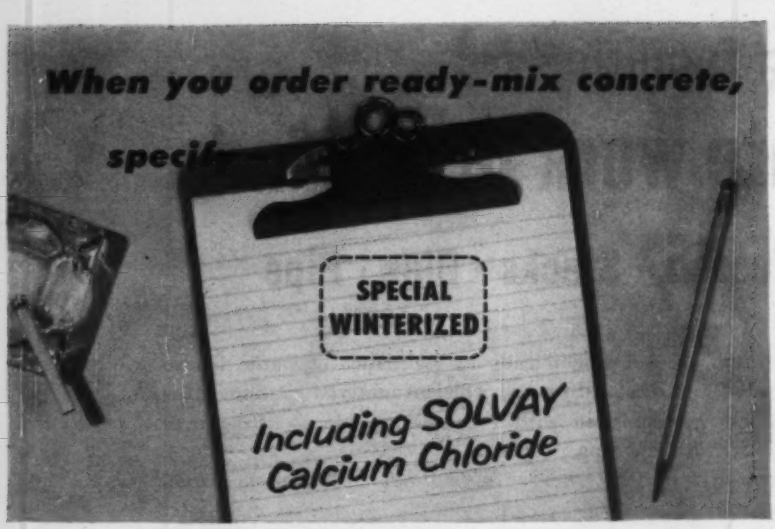

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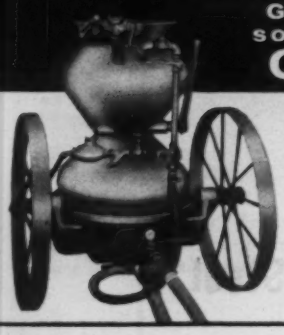

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(Continued from page 107)

▲ **Del E. Webb Constr. Co.**, 5101 San Fernando Rd., Los Angeles, Calif. LB $4,285,446 (5 bidders) constr. College Grove SHOPPING CENTER, College Ave. and Federal Freeway 94, SAN DIEGO, CALIF. College Grove Assocs., c/o John Graham & Co., Land Title Bldg., San Diego, Calif. Bids Oct. 9.

CANADA

BUILDINGS—BA

▲ **Que., Montreal**—OFFICE—BA 11/25—Bank of Montreal, Place D'Armes, 14 story, 153 ft. x 202 ft. head office addn., on St. James St. and 130 ft. on Craig St., $10,000,000 Barott, Marshall, Merrett & Barott, 1425 Mountain St., archts., Lindley Schector, 1425 Mountain St., engr. CD 4/18/56.

HEAVY CONSTRUCTION—LB & CA

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, **Simkins Constr. Co. Ltd.**, Andrews and Jarvis Sts., Winnipeg, Man. CA $942,344, grading culverts and granular base, 11.1 mi. Trans Canada Hy. 17 (58-227), Kenora Co. CD 10/21, under LB.

BUILDINGS—LB & CA

▲ **Allied Constr. Co. Ltd.**, Navy Bldg., Water St., St. St. John's, Newfoundland, CA Approx. $1,500,000 (7 bidders), 1 and 2 story HIGH SCHOOL, ST. JOHN's, NEWFOUNDLAND. United Church Bd. Educ., St. John's, Newfoundland. Bids Aug. 22. CD 8/15.

Finley W. McLachland Ltd., 195 Fairbank Ave., Toronto, Ont., CA Est. $500,000, 2 story, approx. 75,000 sq. ft. rein.-con., structural steel PLANT BLDG., Don Mills and Kern Rds., TORONTO, ONT. Underwood Ltd., 135 Victoria St. E., Toronto, Ont. Awarded Oct. 20. CD 8/8.

Ross & Anglin Ltd., 4400 St. Catherine St. W., Montreal, Que., CA $300,000 (5 bidders), foundations and structural steel for LABORATORY, ADMINISTRATION and WAREHOUSE BLDGS., OFFICE and MANUFACTURING PLANT, Metropolitan Blvd., MONTREAL, QUE. Ciba Co. Ltd. and Mount Royal Chemicals Ltd., both at 1235 McGill College Ave., Montreal, Que. Awarded Oct. 17. CD 6/5.

C. Jobin Ltd., 1100 Vincent Massey St., Quebec City, Que., CA $621,000 (22 bidders), 12,000 sq. ft. PUBLIC BLDG., SHAWINIGAN FALLS, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Oct. 18. CD 9/18, under LB.

PROPOSED PROJECTS

WATER SUPPLY

Calif., La Mesa—La Presa Water Dist., 8810A La Mesa Blvd., voted $425,000 bonds Oct. 8, water line constr. Boyle Engineering Co., 3913 Ohio St., San Diego, consult. engr.

▲ **Fla., Fort Lauderdale**—Bd. Comrs., Broward Co. Court House, water treatment plant, distr. lines for unincorporated county areas, Over $1,000,000. Grant Miller Associates, Inc., 2320 N.E. 171 St., North Miami Beach, consult. engr.

▲ **Texas**—North Central Texas Municipal Water Auth., City Hall, Munday, voted $3,800,000 bonds multi-city municipal water supply development proj. in Haskell, Munday, Rule and Goree. Freese & Nichols, 407 Danciger Bldg., Fort Worth, water engrs. CD 9/29, under Earthworks, etc.

▲ **Tex., Dallas**—City, City Hall, bond election Dec. 2, WW. $15,000,000. CD 9/4/56.

Tex., Grapevine—City, City Hall, voted bonds Oct. 4 WW (incl. filtration plant). $425,000. CD 10/16.

SEWERS, WASTE DISPOSAL

▲ **Calif., La Mesa**—La Presa Water Dist., 8810A La Mesa Blvd., voted $1,500,000 bonds Oct. 8, constr. sewer lines. Boyle Engineering Co., 3913 Ohio St., San Diego, consult. engrs.

Conn., Darien—Town, Town Hall, sewers, Holly Lane, Waldron Rd., Revere Rd., Peterick Rd. portion of Old Parish Rd. $320,000; trunk line sewer for high School on Lessen Tract, $150,000; sewer along Stony Brook, Middlesex Rd., Libby Lane, Noroton Ave., Extn., Parson Walk, Hollow Tree Ridge Rd. $100,000. Bogert & Childs, 145 E. 32 St., New York, N. Y., consult. engrs. CD 3/25.

Ill., Franklin Park—Village, Village Hall, storm sewers, Belmont and Pacific Aves. $995,000. Edwin Hancock Eng. Co., 1509 W. Jackson Blvd., Chicago, consult. engr.

▲ **La., West Lake**—City, City Hall, Contr. PFL-V-16-110, sewer facilities, $1,011,000; Contr. PFL-V-16-11, sewer facilities for Dist. No. 2, $138,000. Barnard & Burk, 1023 Nicholson Dr., Baton Rouge, Zone 2, consult. engrs.

Mass., Somerville—City, P. Wks. Dpt., City Hall, Incinerator. $600,000. Robert Charles Assoc., 8 Abbot Rd., Natick, engrs. CD 8/13.

Minn., Moorhead—City, City Hall, sewage lagoon. $500,000. Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, consult. engrs.

▲ **Mo., St. Louis County**—Metropolitan-St. Louis Sewer Dist., 901 Washington Ave., St. Louis, Zone 1, defeated $4,100,000 bonds Oct. 14, 12½ mi. sanitary trunk sewers, Gravois Creek Sanitary Sub-District in Gravois Creek Watershed, southern part of St. Louis County. CD 8/26.

N. Y., Manhasset—Town Bd., North Hempstead, sewers and treatment plant in Spinney Hill Section. $700,000.

N. Y., Willsboro—Town, Town Hall, sanitary sewerage sys. and treatment plant. $400,000. (State Aid Planning Fund allotted).

▲ O., Akron—City, Leo G. Walker, Serv. Dir., City Hall, 6-yr. sewerage program, incl., storm sewers in Englewood Ave. in vicinity of Hillman Rd., Akers Ave. and Dellenberger Ave., $81,000; storm sewers in Beverly Dr. from Canton Rd. to Ardwell Ave., $100,000; storm sewers in Quayle Dr. and Triplett Blvd. from Springfield Lake outlet to Woodstock Rd., $75,000; storm sewers in N. Union St. from Market St. to Union Place; Perkins St. from railroad to Good St. and Park St. from railroad to 600 ft. east of Union St., $200,000; storm sewers in Morse Rd. Dist. from Mud Run to East Ave., $200,000; storm sewers in W. Thornton St. from Princeton to Coburn Sts. and Coburn St. from Thurston to 322 ft. north $145,000; storm sewers in Lakeside Ave. from Long St. to Kenmore Blvd. and Theodore St. from Kenmore Blvd. to Summit Lake, $125,000; storm sewers in Jenkins Ave. extens. to Lindsay Ave., $130,000; storm sewers in Brown St. Dist. from Brewster Creek to Dresden Ave., $200,000; storm sewers in Archwood Ave. from Sieberling to Stager Sts. and Landon St. from Archwood to Triplett Blvd., $500,000; storm sewers in Waterloo Rd. from Mud Run to Cordelia Ave. and Cordelia Ave. from Sevilla Ave. to Waterloo Rd., $100,000; storm sewers in Western Ave. from Market to Kingsley Sts., $250,000; storm sewers in Hawkins Ave. and Westgate Circle from Alden to Shatto Aves., $250,000; Little Ave. storm relief sewers from Cordova Ave. to Winston St., $500,000; storm sewers in Bye St. storm outlet from Good Park and Frederick Blvds. to the south allotment line, $140,000; storm sewers in Chandler Ave. from Mud Run to east of 21 St., $300,000; storm sewers in Highgrove Blvd. Dist. from Little Cuyahoga River to Shelburn Ave., $200,000; combined sewers in Wooster Ave. Dist. from Douglas to Pine Sts., $100,000; combined sewers in Lods St. Dist. from Little Cuyahoga River to Charles St., $90,000; combined sewers in Home Ave. Dist. north of Talmade Ave., incl. Independence Ave., $450,000; Eastward exten. of southern outfall sanitary sewer from Brewster Creek to Arlington St., $250,000; Sand Run trunk sanitary sewer through Fairlawn Golf property, $100,000; Sand Run trunk sanitary sewer from ex-siphon chamber to San Run Rd., $150,000; sanitary sewers in Waterloo Rd. area between 25 St. and Gaugler Ave. Pumping Station, $200,000; sanitary sewers in Mud Run Dist., from Nordica Ave. to Redbush Rd., $500,000.

▲ Pa., Baldwin—Municipal Auth., Boro of Baldwin, sewage sys., consisting 19.25 mi. 8- to 30-in. terra cotta pipe. $1,100,000. Lorenzi, Dodds & Gunnill, Berger Bldg., Pittsburgh 19, Pa., consult. engrs.

▲ Tex., Dallas—City, City Hall, bond election Dec. 2, sanitary sewers, $5,600,000; storm sewers $3,400,000. CD 1/31/56.

Wis., Fort Atkinson—City, City Hall, sewage treatment plant addns., $460,000. Baxter & Woodman, 68 N. Williams St., Crystal Lake, Ill., consult. engrs.

BRIDGES

Calif., Fullerton—City, 237 W. Commonwealth Ave., Nicolas Ave. Underpass at Union Pacific R.R. $956,000.

▲ N. C., Charlotte—City, City Hall, underpasses on 6th St., W. Trade, W. 4th and W. Morehead. $4,000,000. Frank T. Miller, 109-A Gaston St., Greensboro, consult. engr.

▲ Tex., Dallas—City, City Hall, bond election Dec. 2, bridges. $1,000,000. CD 1/31/56.

▲ Wash., Tacoma—City, City Hall, bridge on Yakima Ave. across Wakefield Dr. $1,235,000. H. Whitacre & Assco., 2907 A St., consult. engrs. Bids 1959. CD 4/23.

STREETS AND ROADS

NEW YORK—Dpt. P. Wks., State Office Bldg., Albany,
Erie and Cattaraugus Counties—constr. 1.4 mi. section Aldrich St. in Gowanda, starting at West Main St. and extending northward to North Water St. along existing St. and northward on new location across new bridge over Cattaraugus Creek and continuing in Erie County to point approx. 0.2 mi. north of Gowanda Village line at "Y" intersection of Taylor Hollow Rd. and Four-Mile Level Rd. $500,000. FAI Proj.

▲ Tex., Dallas—City, City Hall, bond election Dec. 2, street imprvs., paving $22,000,000. CD 1/31/56.

▲ VERMONT—State Dpt. Hys., State House, Montpelier,
Cambridge—hy. and bridge, Vt. Rte. 15. 7 mi. b. conc. pavement and WF Beam concrete deck 2 span bridge, F-030-2 (1). $75,000.
Concord—hy. and bridge U. S. Rte. 22 4.09 mi. 3 in. b. conc. pavement and 3 span bridge, F-028-4 (1). $300,000.
Goshen—hy. and bridge, Rte. 73. 2.2 mi. single tack coat with peastone seal-1 plate pipe arch, ST 191 (R), $75,000.
Milton-South Hero—hy. US Rte. 2. 3.2 mi. F-028 1 (1) $200,000.
Mount Holly—hy. easterly 3.3 mi. F-025-1 (1) $225,000.
Stockbridge—hy. and bridge, Vt. Rte. 107 1.3 mi. 3 in. b. conc. pavement and composite WF Beam, concrete deck single span bridge F022-1 (1). $150,000.
Westminster-Rockingham—hy. and box culvert extens. SA Rtes. 2 and 3, 2.3 mi. single tack coat refined tar peastone seal-1 plate pipe arch. S-0129 (1), $200,000.
Weston—hy. and bridge, Vt. Rte. 8, 2.1 mi. single tack coat refined tar and peastone seal and 1 span 34 ft. composite WF Bridge, S 0133 (1). $75,000. Constr. 1959.

EARTHWORK, WATERWAYS

▲ Ohio—Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, Salt Creek Reservoir to supply 40 m.g. water per day, Cambridge, for Dpt. of Natural Resources. $3,652,329.

† Texas—U. S. Eng., 100 W. Vickery, Fort Worth, flood control, Navarro Mills Reservoir, Trinity River, $590,000 (no appropriation).

▲ Tex., Rockport — Aransas County Navigation Dist., Rockport, development of cove harbor (dredging docks, warehousing, etc.) 1 mi. south of here, $1,000,000, pleasure craft development in Little Bay between Rockport and Fulton (dockage, shelters, service shop, etc.) $250,000.

▲ Washington—Wash. Pub. Power Supply Sys., Kennewick, hydro dam at outlet of Packwood Lake, near here. $5,000,000. R. W. Beck & Assocs., Tower Bldg., Seattle, Zone 1, consult. engrs. Constr. 1960. CD 5/21.

AIRPORTS

▲† Kan., Topeka—BALLISTIC MILLILE FACILITY—U. S. Eng., Federal Office Bldg., Kansas City, Mo., Intercontinental Ballistic Missile Facility, Forbes Air Force Base. $30,000,000. To go ahead early 1959.

LATIN AMERICA

▲ Cuba, Nuevitas — OIL REFINERY — Compania Copetroleo, S.A. Havana, plans oil refinery, 18,000 to 20,000 bbl. daily capacity. $22,500,000.

Mexico, LasVegas de Stillwell—MILL—La Dominicia, S.A. de C.V., (subsidiary Dow Company, Freeport, Tex., U. S. A.) 100,000 tons daily of acid grade concentrate from ore Fluorspar mill, $750,000.

PUBLIC BUILDINGS

Ala., Butler—HOSPITAL—Choctaw Co., plans by Charles H. McCauley, Jackson Blvd., Birmingham, hospital, $600,000.

Ala., Heflin—HOSPITAL—Cleburne Co., Charles H. McCauley, Jackson Blvd., Birmingham, hospital, $400,000.

Ala., Huntsville—CENTER—University of Alabama Tuscaloosa, plans by W. R. Dickson, Huntsville, University of Alabama Center Bldg. $500,000-750,000. CD 8/29.

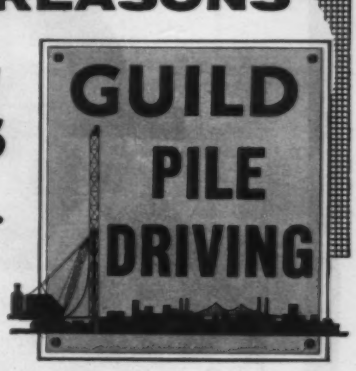
Ark., Harrison—HOSPITAL—Boone Co., Court House, plans by Erhart, Eichenbaum, Rauch & Blass, 201 Chester St., Little Rock, 3 story, brick, concrete, etc. county hospital addn. $680,000.

▲ Ark., Little Rock — SCHOOL — Pulaski Co. Special School Dist. Bd. $1,500,000 bond election Dec. 6,

(Continued on page 114)

Here are 7 GOOD REASONS

For Specifying COBI PILES Driven By...



ECONOMY

COBI Piles are more economical. They are driven in intimate contact with the soil, and their uniform diameter allows a greater displacement of soil which in many cases results in shorter piles for a given load capacity.

EASE OF INSTALLATION

The mandrel and shell are driven in one operation. Shells and mandrels can be furnished in whatever lengths necessary to develop carrying capacity without need of driving test piles.

EASE OF INSPECTION

The permanent pile casing can be visually inspected the full length after driving and prior to placing concrete.

STRAIGHTNESS

COBI Piles are driven with a heavy steel mandrel of uniform cross section. The mandrel expands in the shell locking the two parts into one integrated unit. This very rigid type mandrel assures straighter piles.

WATERTIGHT

The Hel-Cor pile shell used for COBI Piles, manufactured by the Armco Drainage & Metal Products, Inc., has a continuous lock seam. In COBI Piles, this seam and all joints are welded to insure protection against soil and water entering the pile shell.

MAINTENANCE OF SHAPE

The form of the driven shell which receives the concrete is better maintained against soil pressures developed from driving because of the depth of the helical corrugations.

MORE SAVINGS

The light weight and uniform diameter of the pile casing allows ease of handling and field welding of cut-offs, reducing waste.

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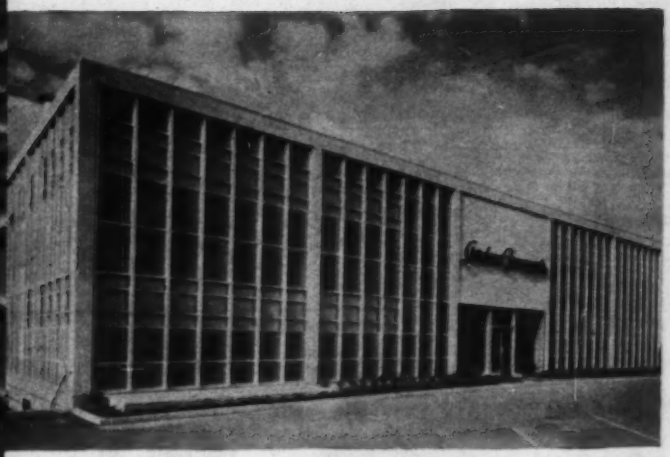
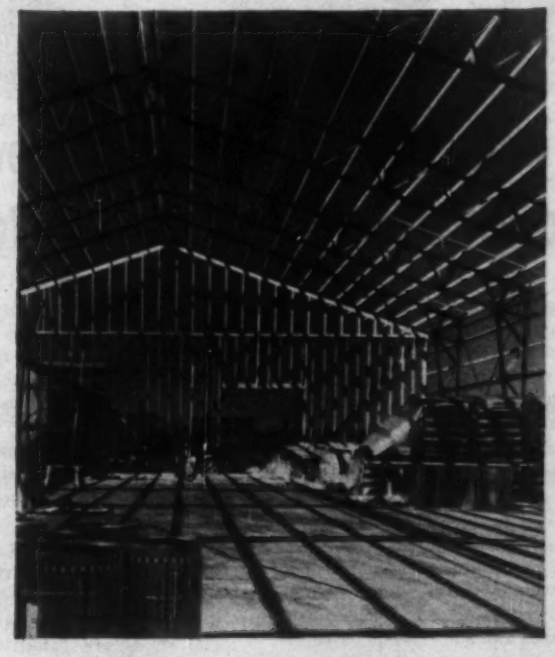
■ If open floor area is wanted in reinforced concrete, the answer is waffle-type flat slab construction formed with *Ceco Steeldomes*. Wide column spacings are achieved with Steeldomes, because of (a) the basic economy of two-way construction, and (b) the saving of dead-load through use of a joist framing system Projecting beams are eliminated—story heights kept to the minimum. Splayed heads and drop panels can be eliminated, too. Your client saves on concrete, steel and labor . . . gets wide open spaces he can convert to profit. R/C duct underfloor electrification is readily installed, allowing electrical and telephone outlet flexibility for the life of the building.



■ If you want to exercise your architectural imagination, turn to *Ceco Aluminum* or *Steel Curtainwalls*. Using experience and sound engineering principles, Ceco can accommodate almost any architectural design. This frees you of limitations. Ceco mullions and windows are proven sound in engineering, practical in application and pleasing in appearance. So to achieve your artistic goal in a practical way, see Ceco for engineering advice before you sit down at the drawing board.



■ If standard clearspan design in one-story construction is wanted, *Cecoframe Steel Buildings* fill the need. Durable Cecoframe structures are ideal for warehousing and manufacturing—for machine shops and utility buildings—can also serve a variety of light-occupancy commercial and industrial purposes. Complete freedom is offered by Cecoframes because they can be enclosed with any material—such as walls of windows, engineered Cecoroll galvanized steel roofing, steel panels, brick, block or wood, with hollow-metal or overhead doors. Cecoframes are designed on open-web steel joist principles for great rigidity. You have freedom in layout because Cecoframe structures can be placed side by side or in L shapes to fit any land site.

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(Continued from page 111)

Senior High School, Elementary School at Cloverdale and elementary school Brady area, west of here.

Ark., Walnut Ridge — SCHOOL — Walnut Ridge School Dist., Bd. Educ., $450,000 bond election Dec. 6, brick, concrete, etc. Junior High School and gym. Erhart, Eichenbaum, Rauch & Blass, 201 Center St., Little Rock, archts.

Calif., Chino — SCHOOL — Chino Unif. School Dist. voted $975,000 bonds Oct. 14, high school. CD 4/10/56.

▲ **Calif., El Cajon**—SCHOOLS—Cajon Valley Union School Dist., 189 Roanoke Rd., voted $1,500,000 bonds Oct. 14, schools.

▲ **Calif., Inglewood**—SCHOOL—Inglewood Unif. School Dist., 111 N. Grevillea, voted $3,700,000 bonds Oct. 14, schools.

Calif., Lakeport—SCHOOL—Lakeport Union Elem. School Dist., plans by Bruce E. Heiser, 251 Post St., San Francisco, wood frame Lakeport Elementary School addn. $500,000.

▲ **Calif., LaMesa**—SCHOOL—LaMesa Spring Valley Elementary School Dist., voted $2,475,000 bonds Oct. 14, schools.

▲ **Calif., Los Angeles**—SCHOOL—Bd. Educ., 1425 S. San Pedro St., plans by Albert C. Martin & Assoc., 333 S. Beaudry St., North San Fernando High School, Astoria and Borden Sts. $4,000,000. CD 6/9.

Calif., Los Angeles—MUNICIPAL—City Bd. P. Wks., City Hall, plans by Garrott & Ain, 2311 Hyperion Ave., 1 story, 14,000 sq. ft. reinforced brick municipal bldg., W. Manchester Blvd., Westchester. $400,000.

Calif., Los Angeles—COUNTY COURTS—Supervs. Los Angeles Co. Bd., 501 Hall of Records, county courts bldg. addn., alterations, East Los Angeles, Cap. Proj. 7176. $446,125. John A. Lambie, 108 W. 2nd St., owners staff engr.

▲ **Calif., Marin City**—HOUSING—Marin County Housing Auth., Box 336, plans by John Carl Warnecke & Aaron Green, 111 New Montgomery, San Francisco, housing incl. eight 5 story apartment bldgs. and thirty-two 2 story bldgs. $4,500,000. Bids soon.

▲ **Calif., San Mateo**—SCHOOL—San Mateo Union High School Dist., 650 N. Delaware St., voted $3,750,000 bonds Oct. 14, constr. Barrett High School and school addns by John Lyon Reid & Partners, 1019 Market St., San Francisco, archts. CD 5/23/56.

▲ **Calif., San Rafael** — AUDITORIUM — Bd. Supervs Marin Co., veterans memorial auditorium. $1,500,000.

▲ **Calif., San Rafael**—CIVIC CENTER—Bd. Supervs. Marin Co., plans by Frank Lloyd Wright, Taliesin West, Paradise Valley, Phoenix, Ariz., civic center. $9,500,000. Constr. July 1959.

▲ **Calif., Sunnyvale**—SCHOOLS—Sunnyvale School Dist., 5 elementary schools. $3,500,000.

▲ **Calif., Torrance**—SCHOOL—Torrance Unif. School Dist., voted $15,000,000 bonds Oct. 14, school constr. CD 7/28.

LIMA Roadpacker speeds freeway construction near Colfax, California

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▲ **Conn., Bridgeport**—SCHOOL—Town, Bd. Educ., 804 Main St., plans by J. Gerald Phelan, 211 State St., North End High School. $3,100,000. Fletcher-Thompson, 211 State St., consult. engrs. CD 10/14.

Conn., Madison—HIGH SCHOOL—Town, Town Hall, plans by Willard Wilkins, 945 Asylum Ave., Hartford, high school Copse Rd. $750,000. Yarwood & Block, Inc., 243 Westover Rd., Simsbury, consult. engrs. Robert S. Loomis, 252 Broad St., Windsor, structural engr. Henry B. Vanzeim & Assocs., 1007 Farmington Ave., West Hartford, mech. engrs. Earl Sexton, 647 Main St., Hartford, sanitary engr. CD 8/11.

▲ **Conn., New Haven**—HOSPITAL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, mental hospital. $2,000,000.

Ga., Athens—PHARMACY—University System of Ga. Building Auth., 244 Washington St. S.W., Atlanta, Pharmacy Bldg., University of Georgia, $500,000.

▲ **Ga., Atlanta**—HEALTH CENTER—Fulton Co. Health Dpt., 244 Central Ave. S.W., Fulton Co. Health Center. $1,510,000.

▲ **Ga., Atlanta**—PHYSICS ADDITION, etc.—University System Bldg. Auth., 244 Washington St. S.W., Atlanta, physics bldg. addn. $750,000; general purpose building $2,000,000; experiment station research bldg. addn. $1,250,000; chemistry and ceramics engineering bldg., $2,400,000, for Georgia Tech.

▲ **Ind., Brazil**—HOSPITAL—Bd. Comrs. Clay Co., Courthouse, plans by McGuire & Shook, Fletcher Trust Bldg., Indianapolis, 41-bed Clay County Hospital addn. $1,065,000. Constr. early in 1959.

▲ **Ill., Chicago**—SCHOOL—Bd. Educ., 228 N. LaSalle St., plans by Perkins & Will, 309 W. Jackson Blvd., Zone 6, 2 story, brick, rein.-con. Richard E. Bird Elementary School, Sedgewick and Hill Sts., $1,070,000. Bids about December. CD 12/31/56.

▲ **Ky., Louisville**—MEDICAL RESEARCH—University of Louisville, 3rd and Shipp Sts., plans by Joseph & Joseph, Speed Bldg., Zone 2, 7 story medical research bldg. in Medical Center on Madison St. between Floyd and Preston Sts. $2,600,000. CD 11/10/52.

Mass., Cambridge—LIBRARY—City Cambridge, c/o City Mgr., City Hall, plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, central library addn., imprvs. $434,000. CD 7/25.

Mass., Franklin—HOUSING—Town Housing Auth., Franklin, plans by Associated Architects & Engineers, 755 Boylston St., Boston, housing for the elderly. $350,000. Constr. 1959.

Mass., Montague — HOUSING — Town Housing Auth., Montague, 35-40 units housing for the elderly. $350,000. Constr. 1959.

Mass., New Bedford—SCHOOL—City, Supt. Schools, 166 William St., New Bedford, high school addn. $350,000. Constr. 1959.

Mass., Orleans—SCHOOL—Town, School Dpt., Orleans, elementary school addn. $350,000. Constr. 1959.

Mass., Peabody—SCHOOL—City, Supt. Schools, 75 Central St., plans by John M. Gray Co., 153 Milk St., Boston, high school rehabilitation. $500,000. Bids in November. Constr. 1959.

Mass., Wellesley—SCHOOL—Town, Supt. Schools, Seaward Rd., plans by Perry, Shaw, Hepburn & Dean, 31 St. James Ave., Boston, high school addn. $350,000. Constr. 1959.

Mich., Corunna—SCHOOL—Bd. Educ., voted $700,000 bonds, elementary school and high school addn.

▲ **Mich., Troy**—SCHOOLS—Troy Twp., Bd. Educ., voted $2,800,000 bonds for constr. 800-pupil high school; 18-room elementary school and addns., repairs to 2 existing schools.

▲ **Minn., Aurora**—HOSPITAL—Village, Village Hall, plans by Melander, Fugelso & Assocs., Inc., 1402 Alworth Bldg., Duluth, Minn., 1 story, 45-bed community hospital. $1,175,000. Bids in February.

▲ **Minn., Bloomington (P. O. Minneapolis)**—SCHOOLS—Bd. Educ., Inspt. School Dist. No. 271, plans by E. D. Corwin & Assocs., Inc., First National Bank Bldg., St. Paul, 2 elementary schools. $1,000,000. CD 12/28/55.

Minn., Lanesboro—SCHOOL—Bd. Educ., $650,000 bond election Nov. 30, high school. $550,000. Extended date. Flad-Smith & Assocs., Younger Bldg., Winona, archts. CD 10/8.

▲ **Minn., Osseo**—SCHOOL—Bd. Educ., Independent School Dist. No. 279, voted $1,300,000 bonds Oct. 14, elementary schools. $1,200,000. Haarstick, Lundgren & Assocs., N. 212 First National Bank Bldg., St. Paul, archts. CD 10/3.

Minn., St. James—SCHOOL—Bd. Educ., plans by Pass, Rockey & Church and M. E. Woyke, Assoc., Elke Bldg., Mankato, Senior High School. $600,000. CD 7/29.

▲ **Mo., Overland (St. Louis 14 P.O.)**—SCHOOL—Riteneour Consolidated School Dist., Bd. Educ., 9120 Bristol St., voted $1,300,000 bonds Oct. 14, high school addn., Junior High School and elementary school. CD 10/14.

Mo., Weldon Spring—SCHOOL—School Dist. R-III, Bd. Educ., voted $630,000 bonds Oct. 18, high school and addns. to Central and Daniel Boone schools. Ernest T. Friton, 410 Security Bldg., St. Louis, Zone 2, archts. CD 10/16.

▲ **Mont., Kalispell**—COURTHOUSE—Flathead Co. Courthouse, plans by Taylor, Thon, Schwartz, & Kirkpatrick, 556 3 Ave. E.N., Kalispell, 2 story, full bsmt., concrete, steel courthouse. $1,345,000. CD 11/12/56.

N. H., Dover—HOUSING—Dover Housing Auth., 93 Pleasant View Circle, 100-unit housing, Mineral Park. $350,000. Constr. 1959. CD 1/3/52.

N. H., Laconia—SCHOOL—City School Dpt. plans by Douglas G. Prescot, 648 Main St., and Henry W. Erickson, 653 Main St., elementry school, 146 Pleasant St. $400,000. Constr. 1959.

▲ **N. H., Nashua**—HOUSING—City Housing Auth., Mayor Dr., housing for the elderly. $1,500,000. Constr 1959. CD 5/2/52.

▲ **N. J., Caldwell**—SCHOOL—Bd. Educ., West Essex Regional School Dist., plans by David Ludlow, 332 Springfield Ave., Summit, regional high school, $4,500,000.

N. J., Carteret—SCHOOL—Bd. Educ., Carteret, plans by Murray Leibowitz, 214 Smith St., Perth Amboy, school and Columbus School renovations. Over $344,000.

▲ **N. J., Clayton**—SCHOOL—Elk annd Franklin Townships Regional School Bd., Clayton, Regional Junior-Senior High School. $1,750,000.

▲ **N. J., Montclair**—HIGH SCHOOL—Town of Montclair, Town Hall, plans by Alfonso Alvarez, 246 Lorrain Ave., Upper Montclair, Montclair HIGH SCHOOL renovation, addns. $2,500,000. CD 7/28.

N. J., Montville—SCHOOL—Bd. Educ., Montville Twp., Montville, elementary school and Central School addn. $350,000.

▲ **N. Y., Dobbs Ferry**—SCHOOL—Bd. Educ. plans by Knappe & Johnson, 20 Overhill Rd., Scarsdale, elementary school. $1,000,000. CD 1/31.

▲ **N. Y., Plainedge**—SCHOOL—Bd. Educ., referendum vote Nov. 22, Junior High School, Baldwin Dr. $2,250,000. CD 3/21/56.

▲ **N. Y., West Hempstead**—SCHOOL—Bd. Educ., referendum vote Nov. 22, Junior High School adjacent to present Junior-Senior High School. $2,000,000. CD 4/18.

N. C., Greensboro—COURTHOUSE—Bd. Comrs. Guilford Co. Courthouse, courthouse addn. $500,000.

▲ **O., Northfield**—HIGH SCHOOL—Northfield-Macedonia Bd. Educ., high school. $1,000,000.

▲ **O., Ontario**—SCHOOL—Bd. Educ. plans by Marr, Knapp & Crawfs, 138 Ray Ave., New Philadelphia, high school. $1,250,000.

O., Prospect—GENERATING PLANT—Village, Village Hall, municipal electric generating sys. $350,000.

O., Steubenville—JAIL AND JUVENILE DETENTION UNIT—Bd. Comrs., Jefferson Co. Court House, plans by Melvin, Rackoff & Assocs., Plaza Bldg., Pittsburgh, Pa., county jail and juvenile detention unit, lease-purchase arrangement. $498,000.

Okla., Miami—SCHOOL—Bd. Educ., voted bonds, Oct. 14, Junior High School. $497,000. CD 10/2.

▲ **Okla., Norman**—UNIVERSITY ADDNS.—Bd. Regents, State Capitol Bldg., Oklahoma City, group of cottages, $350,000; administration, service, student union, $450,000; housing area for 150 students, $500,000; water sys., $50,000; sanitary storm sewers, $80,000; gas sys., $75,000; general area campus paving and concrete walks, $80,000; general earthwork, landscaping, $48,500; hard-paved campus and sheltered auto parking center, $120,000; forum, $600,000; dining hall, $400,000, all above work at University of Oklahoma.

▲ **Okla., Ponca City**—SCHOOL—Bd. Educ., voted bonds Oct. 14, Junior High School, $1,650,000. Timberlake & Canady, Ponca City, archts. CD 10/1.

Ore., Canyonville—HOSPITAL—Blue Mountain Hospital Dist. plans by Charles Johnston, Payette, Idaho, hospital. $400,000.

Pa., Doylestown—SCHOOL—Doylestown Pa. School Bd., plans by Micklewright & Mountford, archts.-engrs., Morrisville, elementary school. $550,000. CD 10/2/57.

Pa., Norwood—SCHOOL—Norwood Pa. School Dist., Norwood, Seneca Ave. School addn., $350,000. Wigmore & Gilfillan, 117 S. 17th St., Phila., consult. engrs. CD 4/3.

Pa., Primos—SCHOOL—Folcroft Pa. School Dist. plans by J. M. Blew & Son, 326 W. State St., Media, Elementary-Junior High School addn. $344,000.

▲ **S. C., Lake City**—HOUSING—Lake City Housing Auth., 100 housing units. $1,301,000.

▲ **Tex., Arlington** — ENGINEERING, etc. — Arlington State College, part 2 and 3 story brick tile, concrete steel engineering bldg. $1,700,000. Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, consult. engrs. Bids soon. CD 10/2.

Tex., Bryan — WAREHOUSE, etc. — State Hy. Dpt., Austin, plans by Philip G. Norton & Assocs., Box 1169, 43,000 sq. ft. steel frame, distr. warehouse and shop. $400,000.

Tex., Conroe—SCHOOL—Conroe Ind. School Dist., plans by Herbert Voelcker & Assocs., 1202 Dennis St., Elementary School No. 2. $375,000.

▲ **Tex., Denton**—BUSINESS ADMINISTRATION, etc.—North Texas State College, plans by Harper & Kemp, 710 Thomas Bldg., Dallas, business admin., $1,265,000; campus earth site work, $50,000; sewers, $75,000. CD 11/7/57.

Tex., Merkel—HOUSING—City of Merkel Housing Auth., 32 units housing. $350,000.

Tex., Midland—SCHOOL—Midland Ind. School Dist., voted bonds elementary school. $750,000. Pierce, Norris & Pace, 1002 W. Wall St., archts.

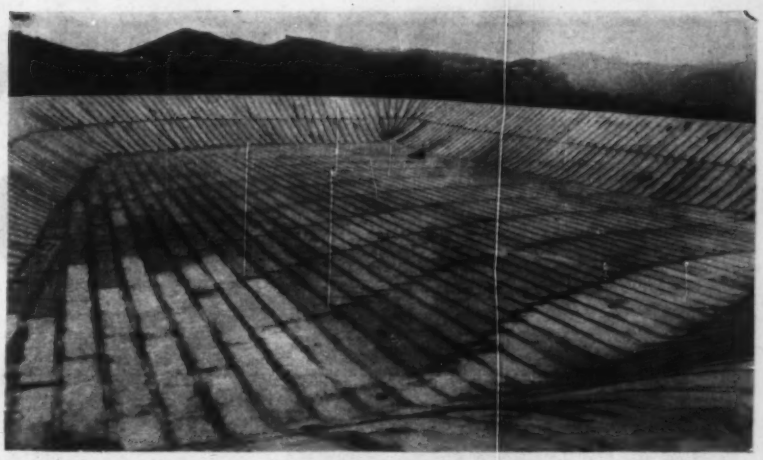
Tex., Port Arthur — AUDITORIUM, etc. — City, City Hall, plans by Lawrence Vidrine, 419 El Paso Ave., auditorium, $935,500; city hall, $500,000. CD 2/20.

Tex., Port Arthur—POLICE and MUNICIPAL COURTS—City, City Hall, plans by Lawrence Vidrine, 419 El Paso Ave., police and municipal courts. $850,000.

† **Va., Bedford**—HOUSING UNITS—Base Procurement Office, United States Air Force, Stewart Air Force Base, Newburgh, N. Y., constr., landscaping, etc. for 27 family housing units at AC&W Station, M-21, Inv. 30-603-59-18. $270,000.

Wash., Clarkson—SCHOOL—School Dist. 25-185, Clarkson, plans by Putnam & Dimke, Lewiston, Idaho, elementary school, $360,000.

(Continued on page 118)



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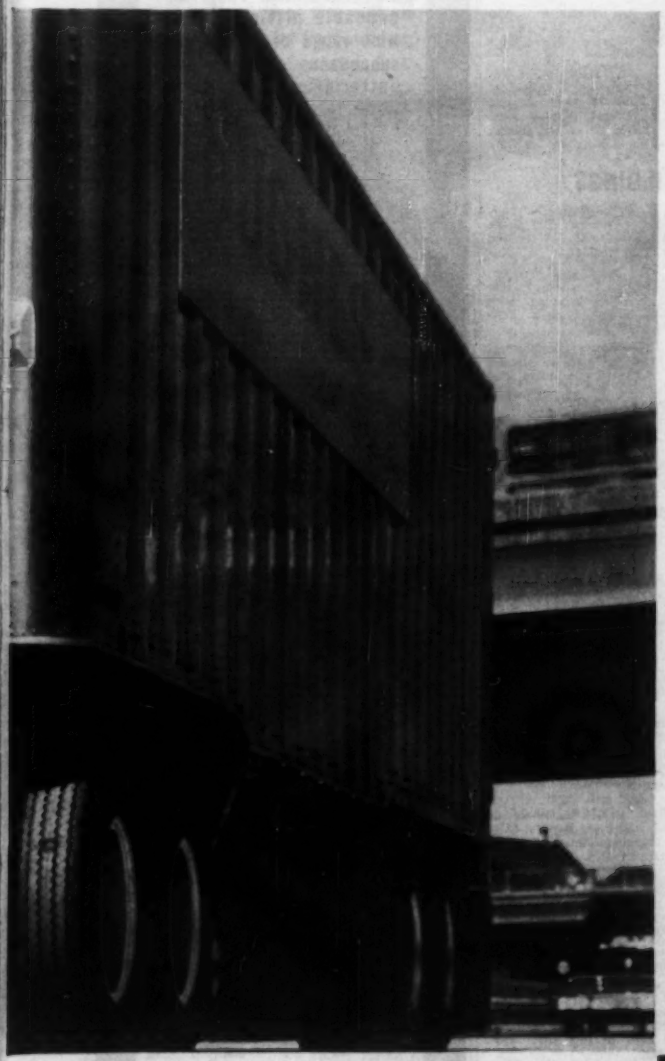

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(Continued from page 115)

▲ **Wash., Seattle** — CONCERT-CONVENTION HALL — City, County-City Bldg., plans by B. M. Priteca, Palomar Bldg., J. Chiarelli, 2nd and Cherry Bldg. and Bassetti & Morse, Tower Bldg., remodel civic auditorium into concert-convention hall. $5,000,000. Bids 1959. CD 4/29.

▲ **Wis., Platteville** — PHYSICAL EDUCATION — Wis. State Colleges Bldg. Corp., Madison, physical education bldg. $1,250,000. Gansewitz & Cashin, 32 S. Hamilton, Madison, consult. engrs. CD 9/21/54.

▲ **Wyo., Casper**—SCHOOLS, etc.—School District No. 2, Casper, $1,500,000 bond election Dec. 2, science bldg. for Casper Junior College and schools. CD 3/14.

Wyo., Lander—SCHOOL—Fremont County Vocational High School, Lander, bond election Nov. 15, high school addn. $800,000. CD 5/11/55.

▲ **Ont., Oshawa**—HOME FOR AGED—City, City Hall, plans by John B. Parkin Assocs., 1500 Don Mills Rd., Postal Station "J", Toronto, 200-bed home for aged. $1,000,000. Bids early in 1959. CD 11/19/56.

Ont., Ottawa—SCHOOL—Ottawa Pub. School Bd., 330 Gilmour St., plans by Gilleland & Strutt, 304 Laurier Ave. W., Parkway Public School, Woodroof Ave. $350,000.

▲ **Ont., Toronto**—HOUSING—Housing Authority of Toronto, 415 Gerrard St. E., 153 apartments, Queen St. and Woodward Ave., $1,375,000; 78 suite, housing Doel Ave., $938,000; 78 apartments, Norway Ave., $792,000; approx. 40 unit housing, Shaw and Dundas Sts., $440,000; 40 unit housing, Gerrard St. at Weyland Ave., $440,000. CD 1/28/46.

COMMERCIAL BUILDINGS

▲ **Calif., Burlingame**—COLLEGE BUILDINGS—Our Lady of Mercy Corp., c/o Ryan & Lee, archts., 305 Grant Ave., San Francisco, college, dormitories, library and admin. bldg. College of Our Lady of Mercy. $1,400,000.

Calif., Pasadena—BIOLOGY—California Institute of Technology, 1201 E. California St., biology bldg. wing addn. $900,000. Physical Eng. Group, 1201 E. California St., Pasadena, owners staff engr.

▲ **Calif., Tiburon**—APARTMENT—Mattei Development Co., foot of Broadway, San Francisco, plans by Stephen M. Heller & Assocs., Pier 18, The Embarcadero, San Francisco, apartment development on 10 acre site, incl. swimming pools, garages. $3,000,000.

▲ **Calif., Venice**—HOTEL—Manchester Properties, 4950 Wilshire Blvd., Los Angeles, plans by Welton Beckett & Assoc., 5657 Wilshire Blvd., Los Angeles, 2 story, brick, stucco hotel, 8625 Lincoln Blvd. $1,500,000.

Conn., Avon—HOUSES—A. & A. Builders, Inc., Crossroads Plaza, West Hartford, 55 houses, "Roaring Brook Acres," Lovely St. $879,450.

▲ **Conn., Bloomfield**—HOUSES— L. & S. Builders, 154 Rockwell Ave., 55 houses, Livingstone Rd. $1,567,500.

Conn., Ridgefield—HOUSES—Ridgefield Lakes, Route 7, 45 houses, "Ridgefield Lakes" second section, Route, 7. $393,750.

Conn., Wallingford—PATIENTS—Davie Russell Hyman Hospital plans by James Ritchie & Assocs., 135 Clarendon St., Boston, Mass., patients bldg. $900,000.

Conn., West Hartford—HOUSES—The Marjoe Corp., 20 Brook St., Hartford, 40 houses "Rocklege Estates" second section, West Point Terrace. $780,000.

▲ **Del., Wilmington**—OFFICE—Harry Rubenstein Equitable Trust Bldg., Wilmington, Del., and Bernard Weinberg, 2409 N. Broad St., Phila., Pa., plans by Milton Schwartz, 10 S. 18th St., Phila., Pa., office bldg., 12th and King Sts. $1,000,000. Bids soon. CD 5/6.

▲ **Ill., East Alton**—SHOPPING CENTER—Donald H. Shanedling Assocs., 215 San LaCienga, Beverly Hills, Calif., 200,000 sq. ft. shopping center, Eastgate Plaza Shopping Center, Alternate U.S. Rte. No. 67. $6,000,000.

▲ **Ill., Lyons**—MOTEL—Owner, c/o Chester A. Stark, archt., 146 Greenwood Ave., Glenview, 100 unit motel, incl. swimming pool, restaurant, parking area, Rte. 66 west of Harlem Ave. $1,000,000.

Ky., Pikeville—CHAPEL, etc.—Pikeville College, 100 x 120 ft. combination chapel and fine arts bldg. $500,000.

La., Harvey—BOWLING ALLEY—Har-Mar Corp., c/o Ledser, Saputo & McNaughton, archts., 510 N. Jefferson Davis Parkway, New Orleans, 1 story, 30,000 sq. ft., concrete block and glass bowling alley, 3200 block of Expressway. $345,000.

La., New Iberia—HOME for AGED—St. Peter's Catholic Parish, New Iberia, brick, concrete 75-bed Home for Aged. $450,000.

La., Sulphur—HOSPITAL—West Calcasieu-Cameron Hospital Admin., Sulphur, plans by Geier & Lasseigne, 3160 Florida St., Baton Rouge, 40-bed hospital addn. $365,000.

Md., Bethesda—STORES, etc.—Joseph Richards, Jr. & Raymond A. DuFour, 495 Bradley Blvd., plans by Anthony Campitelli, 7961 Eastern Ave., Silver Spring, stores and office bldg., Bradley Blvd. and Arlington Rd. $700,000.

▲ **Mass., Boston**—BANK—Merchants National Bank, 28 State St., plans by Kenyon & Ekhardt, Inc., 334 Boylston St., bank, Huntington Ave. in Prudential Civic Center. Over $1,000,000. Constr. 1962.

Mass., Bridgewater-Raynham—SCHOOL—Towns Bridgewater & Raynham, School Bldg. Needs Comm., Supt. Schools, Bridgewater, regional high school. $750,000. Constr. 1959.

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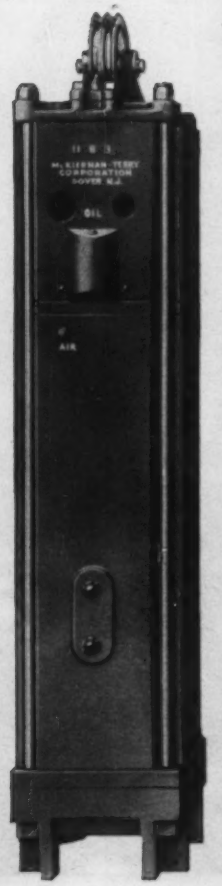

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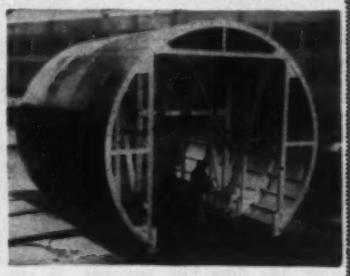

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Mass., Fall River—CLINIC—Truesdale Clinic, Inc., 151 Rock St., plans by Ellerbe & Co., 404 First National Bank Bldg., St. Paul, Minn., clinic bldg. between President Ave. and Stanley St. $350,000. Bids soon.

Mass., Needham—CHURCH—Needham Presbyterian Church, 1458 Great Plain Ave., plans by Arland A. Dirlam, 739 Boylston St., Boston, church. $350,000. Constr. 1959.

Mass., Newton—CHAPEL—Newton College of the Sacred Heart, 885 Centre St., plans by Maginnis & Walsh & Kennedy, 126 Newbury St., Boston, chapel. $350,000. Constr. 1959.

Mass., Springfield—SHOPPING CENTER—Eastern State Shopping Centers, Inc., 6 Mall Walk, Yonkers, N. Y., shopping center, Breckwood Blvd. and Wilbraham Rd. $400,000. Constr. 1959.

Mass., Sudbury—CHURCH—St. Elizabeth's Episcopal Church, Sudbury, plans by John A. Carter, 27 Elm St., Nashua, N. H., church. $350,000. Constr. 1959.

▲ N. J., Jersey City—RESIDENCE HALL—St. Peter's College, 2641 Boulevard, Jersey City, plans by Henry Dagit, Jr., 1329 Race St., Phila., Pa., residence hall for faculty on Boulevard between Montgomery and Glenwood Aves., $1,000,000. Bids soon. CD 2/19.

▲ N. M., Albuquerque—SHOPPING CENTER, etc.—Winrock Enterprises, Petit Jean Mountain Morrilton, Little Rock, Ark., plans by Gruen C Associates, 8460 Santa Monica St., Los Angeles, Calif., shopping center motel office, $8,500,000; hard paving area and 4,000-car auto parking center, $200,000; lighting, $75,000.

▲ N. Y., New York—APARTMENT—Malan Constr. Corp., 2 Park Ave., Zone 16, 20 story apartment, southwest corner First Ave. and East 65th St. $3,000,000.

▲ O., Avon Lake—SHOPPING CENTER—Kenneth R. Evenson Co., 32355 Lake Rd., plans by Meyer & Fauver, 945 Broadway, Lorain, shopping center, Walker and Lear Rds. $4,000,000.

▲ O., Cincinnati—LIBRARY—Hebrew Union College, Jewish Institute of Religion, Clifton Ave., plans by Hall-McAllister & Stockwell, engrs.-archts. 706 Walnut St., library bldg. $4,200,000. Bids November or December.

O., Lakewood—APARTMENTS—Kenilworth Estates, Inc., 3134 Euclid Ave., Cleveland, Zone 15, plans by Heine, Criser & Williamson, 105 Front St., Berea, two 3 story, 17 suite apartments, Lake Ave. $400,000.

O., Lakewood—APARTMENT—Martin Rini, 17134 Amber Dr. NW, Cleveland, 78 suite apartment, 12567 Clifton Blvd. $750,000.

▲ O., Newark—REGIONAL OFFICE—State Farm Mutual Automobile Insurance Co., 1470 Grandview St., Columbus, 60,000 sq. ft. regional office bldg. on ten acre site, Granville Rd. $1,000,000.

O., Richmond Heights—HOSPITAL—Forest Hills Hospital, 928 E. 152 St., Cleveland, Zone 10, plans by Arnold A. Peterson, 2536 Euclid Ave., Cleveland, Zone 15, 50 bed osteopathic hospital, Chardon Rd. near Richmond Rd., $500,000.

▲ O., Vermilion—SHOPPING CENTER—Kenneth R. Evenson, Co., 32355 Lake Rd., Avon Lake, plans by Meyer & Fauver, 945 Broadway, Lorain, shopping center on site of Old Crystal Beach Parking Lot, $1,500,000.

▲ Okla., Oklahoma City—RESIDENTIAL DEVELOPMENT—Ben C. Wileman, 5103 N. Shartel St., 320 acre residential subdivision development at N. W. 23 and Meridan Sts. $1,000,000.

Pa., Doylestown—HOSPITAL—Doylestown, Pa., Emergency Hospital, Doylestown Hospital new wing. $500,000. Lawrie & Green, 321 N. Front St., Harrisburg, archts. Edgar T. Clapp, 321 N. Front St., Harrisburg, engr. Bids soon. CD 10/2/57.

Pa., King of Prussia—RESTAURANT—Owner, c/o Haag & D'Entremont, Jenkintown, constr. Horn and Hardart Restaurant. $344,000.

▲ Pa., Phila.—APARTMENT HOUSE—Owner, c/o Demchick & Supowitz, archts., 246 S. 15th St., apartment house, 20th and Sansom Sts. $4,500,000.

▲ Pa., Phila.—STUDENT UNION—Drexel Institute of Technology, 32nd and Chestnut Sts., plans by Baader, Young & Schultze, 1500 Walnut St., student union bldg. $1,500,000. CD 5/27/57.

R. I., Cranston—CHURCH—Immeculate Conception Parish, R. C. Diocese, 34 Fenner St., East Providence, church, Oaklawn Ave. $450,000. Constr. 1959.

R. I., Cumberland—NOVITIATE—Mount Saint Rita's Convent, Diamond Hill Rd., plans by Maginnis & Walsh & Kennedy, 126 Newbury St., Boston, Mass., novitiate bldg. addn., chapel, classroom and gymnasium wing. $350,000. Constr. 1959.

▲ Tenn., Nashville—SHOPPING CENTER—Dobson & Johnson, 3 National Bank Bldg., plans by Hart, Freeland & Roberts, 3rd National Bank Bldg., shopping center. $1,000,000.

▲ Tex., Abilene—BANK, etc.—Bank of Commerce and Westgate Shopping Center, Bank of Commerce Bldg., bank and shopping center. $1,000,000.

▲ Tex., Austin—ADMINISTRATION, etc.—Austin Theological Seminary, (Synod of Texas, United Presbyterian Church, U. S. A., 901 Lancaster St., Sponsors) admin.-classrooms, study. $2,000,000.

▲ Tex., Dallas—DWELLINGS—Centex Constr. Co., 4606 Greenville Ave., plans by C. Sidney Milam & Assocs., 368 Casa Linda Plaza, 36 dwellings $378,000. 24 dwellings $349,200, 28 dwellings $364,500 in Country Club Estates and Oakland Hills.

Tex., Dallas — HOMES — Centex Constr. Co., 4606 Greenville Ave., plans by C. Sidney Milam & Assocs., 368 Casa Linda Plaza, 30 Decor homes $369,150. 27

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125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

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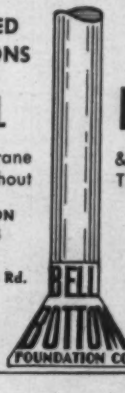

Decor homes $361,125. Johnson Park near Webb Chapel and Valley View Rds.

Tex., Dallas—CHURCH—Churchill Way Presbyterian Church, 4231 University Blvd., Phase 1 church plant. $350,000. Phase 2, church plant, $350,000, Preston Rd. and Churchill Way.

▲ **Tex., Dallas**—HOTEL—Exchange Park, 1200 Exchange Bank Bldg., plans by J. N. McCammon & Assocs., Meadows Bldg. (1st unit) 16 story 500 unit of proposed 1,000 room hotel. $6,000,000; (2nd unit) 500 room unit of 1,000 room hotel $6,000,000. CD 7/13/55.

▲ **Tex., Houston**—APARTMENT, etc.—Verne Harris & Ken Boggess, Builder, 8740 Linkterrace St., plans by Anthony Luciano & Assoc., engrs.-designers, 600 McGowen St., 140 unit apartment program, Kapri Lane, Woodside Plaza off Stella Link Rd., $1,100,000; 96 unit motel off 8200 block Main St., $1,250,000; 3 swimming pools, off 8200 block, Main St., $75,000.

Tex., Houston—BOWLING CENTER—O.S.T. Shopping Center, Geo. Haiken, Builder & Assocs., 2107 North Blvd., 28 lane bowling center, Scott St. and Old Spanish Trail. $350,000.

▲ **Tex., Houston**—SHOPPING CENTER—O.S.T. Shopping Center, Geo. Haiken, Builder & Assocs., 2107 North Blvd., shopping center, Scott St. and Old Spanish Trail. $2,500,000.

▲ **Tex., Longview**—SHOPPING CENTER—Harvey Little Builder, Forest Park Subdivision Office, 1 story, 75,000 sq. ft. masonry shopping center, Forest Park Addn. $1,000,000.

Tex., Mesquite—SHOPPING CENTER—Jas. Riggs Builder, 1052 Lakeshore, Dallas, shopping center. $500,000.

Tex., Midland—DWELLINGS—Nash Phillips-Copus Constr. Co., 1600 E. Pecan St., 28 dwellings $356,500. 32 dwellings $368,100.

▲ **Tex., Pasadena**—APARTMENT, etc.—Verne Harris & Ken Boggess, Builder, 8740 Linkterrace St., 336 unit apartment, $2,700,000; auto parking center, $175,000, Tatar St., at Red Bluff Rd.

▲ **Tex., San Antonio**—DWELLINGS—Lackland City Homes, 103 Springvale St., plans by Reginald Roberts & Assocs., 2600 N. McCullough Ave., 41 low-priced dwellings, $369,000; 34 low priced dwellings, $347,500; 37 low-priced dwellings, $355,500, Loope 13 and Hy. 90. W. F. Castella & Assocs., 1039 W. Hildebrand Ave., consult. engrs.

Tex., Winnie—SHOPPING CENTER—Owner, c/o O. L. Hazelwood, archt., Link Bldg., Palestine, shopping center. $350,000.

Wash., Olympia—RESIDENCE—Mt. Martin's College, Olympia, plans by Gotteland & Assocs., 2nd and Cherry Bldg., Seattle, Zone 4, faculty residence bldg. $550,000. CD 10/14.

▲ **Wash., Seattle**—HOTELS, etc.—Pan Pacific Mortgage Co., c/o C. Vern Higman, Dexter Horton Bldg., plans by Dawson & Campbell, 9404 25th Ave. N.E., development of Blake Island, incl. 2 hotels, golf course, residential community, boat mooring, shopping center, public park and replica of Indian Village. $35,000,000.

▲ **Que., Point-aux-Trembles (Montreal suburb)**—HOUSING—St. George Gardens Ltd., 13000 Notre Dame St. E., Montreal, 210 unit rental housing. $1,800,000.

▲ **Alta., Edmonton**—HOSPITAL—Edmonton General Hospital, Jasper Ave. between 111th and 112 Sts., plans by Bell & McCulloch, 10607 100th Ave., 6 story, 300 bed hospital wing addn. $3,500,000.

▲ **Alta., Lethbridge**—HOUSING—Lethbridge Housing Development, 156 unit housing for low-income families, $1,243,530.

Alta., Lethbridge—HOSPITAL—St. Michael's General Hospital, 13 St. and 9 Ave. S., plans by Meech, Mitchell, Robbins & Assocs., 529 6 St. S., 90 bed hospital wing addn. $350,000.

▲ **Ont., Toronto**—HOUSING—Greenwin Constr. Co. Ltd., 3130 Bathurst St., plans by Jas. A. Murray, 440 Bayview Ave., Green Park Apartments, low rental housing, SW corner of Bathurst St. and Finch Ave. $9,500,000. CD 5/6.

▲ **Que., Montreal**—SHOPPING CENTER—Maisonneuve Shopping Centre, c/o Reuben Fisher, archt., 3177 St. Sulpice St., partially 2 story, 118 x 619 ft. shopping centre, Sherbrook St. E., between Prefontaine and Viaduc Sts. $1,500,000. Irving S. Vacker, 5253 Decarie Blvd., consult. engr.

Sask., Regina—MEDICAL ARTS—Medical Arts Clinic Ltd., Cornwall and 11 Ave., plans by Stock Ramsay & Assoc., 2041 Hamilton St., 4 story, 50 x 100 ft. steel frame, brick Medical Arts Bldg. addn., Cornwall St. and 11 Ave. $430,000. Bids 1959.

INDUSTRIAL BUILDINGS

Conn., Darien—LAUNDRY—Chas. A. Lupinacci Jr., 345 High Ridge Rd., Stamford, laundry bldg., Post Rd., $100,000.

Conn., Hamden—PLANT—C. W. Blakeslee & Sons, Inc., 58 Waverly St., New Haven, pre-stress concrete bed plant, Pine Rock Ave., $250,000.

Ill., Chicago—PLANT—Empire Oil Co., 4800 S. California St., plans by M. J. McCarthy, 2701 W. 79 St., 20,000 sq. ft. plant addn. for storage purposes. $150,000.

▲ **Ill., Springfield**—PLANT—Pillsbury Mills, Inc., Pillsbury Bldg., Minneapolis, Minn., expanding plant facilities. Over $1,000,000.

Ind., Warsaw—WAREHOUSE—North American Marine Mfg. Corp., Warsaw, 50,000 sq. ft. warehouse adjacent to present plant, 3 mi. north of here. $400,000.

La., Ruston—FACTORY—Lincoln Enterprises, Inc., Ruston, plans by Rivers & Heurer, 513 Ouachita National Bank Bldg., Monroe, factory addn. $200,000.

(Continued on page 122)

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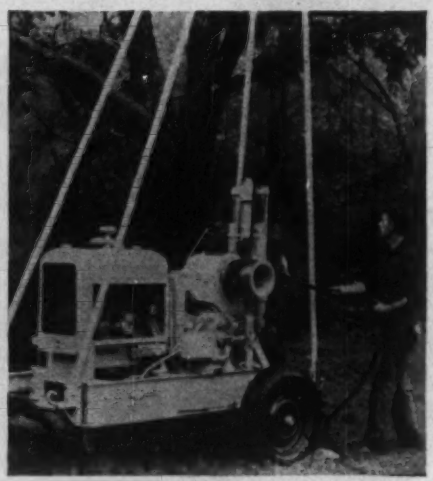

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(Continued from page 120)

Mass., Boston—LAUNDRY—Gilman Towel Supply Co., Inc., 99 Bristol St., plans by Meyer Louis, 294 Washington St., laundry addn., alterations, Bristol St. $100,000. Constr. late 1958.

Mo., St. Louis County — PLANT — American Vitrified Products Co., 2801 Hereford St., St. Louis, Zone 9, manufacturing plant for production of concrete pipe and office facilities on 17-acre site in Page-Midland Industrial Town, Vinita Park north of Page Ave. between Walton Rd. and North and South Rd.

▲ N. C., Shelby—PLANT—Fiber Industries, Inc., Celanese Bldg., Charlotte, chemical plant, $50,000,000.

▲ Nev., Reno—NEWSPAPER PLANT—Reno Newspapers Inc., c/o Pres., Nevada State Journal & Reno Evening Gazette, 125 N. Center St., plans by Vhay & Grow, 33 E. Truckee River Lane, 2 story, bsmt., newspaper plant. $2,500,000. Wallace J. Rabenstine, 1865 Simpson St., consult. engr.

N. H., Tilton—INDUSTRIAL PARK—Lakes Region Industrial Park, Inc., industrial park. $350,000. Anderson-Nichols & Co., 10 Eastman St., Concord, consult. engrs. Constr. 1959.

N. J., Perth Amboy—REFINERY—Chesebrough-Pond's, Inc., Clinton, Conn., white oil and petroleum refinery modernization. $200,000.

▲ N. Y., Webster—RESEARCH LABORATORY—Haloid Xerox, Inc., 240 Madison Ave., New York, N. Y., research laboratory. Over $1,000,000. Completion by early 1960.

Pa., Croydon—PLANT—Railway Specialties Corp., Croydon, mfg plant (rebuild for damage). $300,000.

S. C., Westminster — PLANT — Jantzen Southern Co., Westminster, plant addn. $100,000.

Tex., Dallas—WORK CENTER—Southwestern Bell Telephone Co., 308 S. Akard St., plans by Jacob E. Anderson, 610 Thomas Bldg., 1 story, 120x120 ft. work center, Jack and McKinnon Sts. $100,000.

Tex., Dallas—WAREHOUSE—Southwestern Paper Co., 413 S. Field St., warehouse. $100,000.

Tex., Houston—PARKING GARAGE—Continental Bank & Trust Co., 220 Main St., multi-storied mechanical parking garage, site 711 Fannin St. $750,000. (not for immediate constr.).

Vt., Bennington—INDUSTRIAL PARK—Bennington County Industrial Corp., Pownal, Me., industrial park, Lyons Distr., 43 acres. $500,000.

Wash., Seattle—REPAIR SHOP—W. M. Investment Co., 5930 1st Ave. S., plans by Bindon & Wright, Hoge Bldg., 62 x 200 ft. repair shop on piling fdn. $110,000.

Wash., Tacoma—PLANT—U. S. Oil & Refining Co., Tideflats, asphalt plant. $750,000. CD 7/15.

▲ Man., Winnipeg—PLANT—Imperial Oil Ltd., 445 S. Christina St., Sarnia, Ont., alkylation plant. $3,000,000.

Que., Montreal—PLANT—Durham Industries Ltd., 1435 Island St., 45,000 sq. ft. plant addn. St. Patrick St. between Island and Shearer Sts. $200,000. C. B. Weinbrenner, 4780 Cote des Neiges Rd., consult. engrs.

Sask., Saskatoon—FACTORY—Gevelot of Canada Ltd., subsidiary of Gevelot of Paris, France, factory. $750,000.

UNCLASSIFIED

▲ Fla., Ocala—ELECTRICAL DISTRIBUTION LINES—City, City Hall, electrical distr. lines. $1,200,000 C. B. McCartney, 6203 3 St. S., St. Petersburg, consult. engr.

▲ Illinois—NATURAL GAS LINE—Illinois Power Co., 135 N. Main St., Decatur, development of underground storage facilities for natural gas, incl. installing pipe, compressors, etc. near Tilden, Randolph Co., $3,000,000, development underground storage facilities for natural gas, incl. installing pipe, compressors and other equipment near Freeburg, $3,000,000, Constr. probably in April.

▲ O., Cleveland—CONVEYOR BELT SYSTEM—Republic Steel Corp., 25 Prospect Ave. NW, Zone 15, ½ mi. conveyor belt sys. over Cuyahoga River and Independence Rd., to transport coke from coke plant to blast furnaces. $2,000,000.

Texas—RURAL POLE LINES—Four States Telephone Co., Brownwood, rural pole lines to new fields and imprv. service to existing fields. Brownwood, Kimble, Llano and Menard Counties. $635,000.

▲ Texas—GAS PIPE LINES—Northern Natural Gas Co., 2223 Dodge St., Omaha, Neb. natural gas pipe lines, $2,800,000; gas line pumping station, $352,700.

▲ Texas—GAS SUPPLY LINES, etc.—Permian Basin Pipeline Co., 2223 Dodge St., Omaha, Neb. 60 mi. 16 in. lateral gas supply lines, 11 mi. field lines $1,200,000; meter stations $100,000, in Wink area, Winkler Co.

▲ Tex., Dallas—PARKS—City, City Hall, bond election Dec. 2, municipal parks. $2,900,000. CD 2/8/56.

▲ Washington—HAWK MISSILE BATTERIES—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, 6 "Hawk" missile batteries in Seattle-Olympia area, with 12 launchers each. $9,000,000. Constr. 1960.

▲ Wash., Seattle—AQUARIUM—City, County-City Bldg., Zone 4, plans by Detlil & Peck, Securities Bldg., Zone 1, saltwater aquarium in Golden Gardens Park, $1,100,000. CD 8/28.

▲ Que., Rimouski—WINTER PORT—Dpt. P. Wks., Hunter Bldg., Ottawa, winter port, incl. wharves, piers, loading facilities. $4,000,000. Leroux & Marquis, 8 St. Edmond St., Rimouski, consult. engrs.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 12 Massachusetts
STREETS AND ROADS
November 12 Massachusetts

BUILDINGS—BA

▲ **Conn., Stratford**—SCHOOL—BA 12/4—Town, School Bldg. Comm., Town Hall, High School North End. $3,000,000. Bannon & Antinozzi, 2503 Main St., archts. CD 5/29/57.

HEAVY CONSTRUCTION—LB & CA

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord, Bids opened 10/17,

George Brox, Inc., 1454 Methuen St., Dracut, Mass. LB **$536,530**, 0.417 mi. hot b. conc. and 201 ft. steel beam bridge over Nashua By Pass. Nashua, Hillsboro Co. CD 10/13.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Berke Moore Co., Inc., 8 Newbury St., Boston, Mass., CA **$4,976,736**, est. $5,480,507, hy. reconstr. Rte. 28 FA Proj. 1-93-1(10)-2 Section A, Contr. B, Medford. Bids Sept. 16. CD 9/18, under LB.

BUILDINGS—LB & CA

▲ **Brendott Corp.**, 518 Forest Ave., Portland, Me., Separate Contracts, **$3,600,000**, RESIDENTIAL DEVELOPMENT "Mid-Town Surburbia" 180 houses, Brighton Heights Section, PORTLAND, ME. Philip P. Snow, 477 Congress St., Portland, Me., archt.

Henry L. Paradis, Nasonville Rd., Gonic, N. H. Owner Builds. Approx. **$600,000**. HOUSING DEVELOPMENT, Eastern Vee, Portland St. area Florence Brook, Washington St., ROCHESTER, N. H.

Tornabene Bros. Co., 170 Needham St., Newton, Mass., CA **$926,000**, E-58-1 Contr. 1, DORMITORY, KITCHEN and DINING FACILITIES, State Teachers College, BRIDGEWATER, MASS. Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Oct. 10. CD 10/15, under LB.

Lilly Constr. Co., 110 Western Ave., Brighton, Mass., CA Est. **$500,000** INDUSTRIAL BLDGS., Industrial Park-Mercer Rd. and Worcester Turnpike, NATICK, MASS. Cerel-Perini Assoc., Inc., 18 E. Central St., Natick, Mass. Samuel Glaser Assoc., 234 Clarendon St., Boston, Mass., archts.

DeStefano Constr. Co., 319 Chelsea St., East Boston, Mass., LB **$672,400** JUNIOR HIGH SCHOOL addn., Kingsbury St., WELLESLEY, MASS. Town, Supt. Schools, Seaward Rd., Wellesley, Mass. Bids Oct. 23. CD 9/30.

Turner Constr. Co., 38 Newbury St., Boston, Mass., CA Est. **$400,000**, WAREHOUSE and DISTRIBUTION CENTER, READING, MASS. Addison-Wesley Publishing Co., Inc., South St., Reading, Mass.

Daniel O'Connell Sons, Inc., 480 Hampton St., Holyoke, Mass., CA **$709,829**, est. $700,000 HHFA Mass.-19-CH-33(D) RESIDENCE BLDG. on Campus, SOUTH HADLEY, MASS. Mount Holyoke College, Bd. Trustees, South Hadley, Mass. Bids Oct. 16. CD 10/21, under LB.

Nanni Bldg. Co., 1415 Atwood Ave., Johnston, R. I. LB **$756,000**. JUNIOR HIGH SCHOOL, JOHNSTON, R. I. Town of Johnston, 80 Greenville Ave., Johnston, R. I. Bids Oct. 23. CD 10/10.

▲ **Fusco-Amatruda Co.**, 59 Amity Rd., New Haven, Conn., CA **$2,500,000**, MANUFACTURING PLANT, 1 story, wing addn. to production bldg., boiler house, laboratory, warehouse, railroad dock, CLINTON, CONN. Cheseborough-Pond's, Inc., 485 Lexington Ave., New York, N. Y. Awarded Oct. 24. CD 7/10.

▲ **Steiner Inc., Glenridge Rd., Fairfield, Conn.**, Owner Builds, **$1,413,000**. 90 HOUSES. "Purdy Hill Estates" second section, Purdy Hill Rd., MONROE, CONN. CD 6/2.

Franklin Constr. Co., 1 Primrose St., North Haven, Conn., CA **$658,890** 1 story, masonry ELEMENTARY SCHOOL, Grannis Rd., ORANGE, CONN. Town, School Bldg. Comm., 637 Orange Center Rd., Orange, Conn. Bids Oct. 1. CD 10/17, under LB.

▲ **Colonial Constr. Co., Inc.**, 112 Pinewood Trail, Nichols, Bridgeport, Conn., Owner Builds, **$1,400,000** 80 HOUSES, "Mt. Pleasant Park" Mt. Pleasant Ave., STRATFORD, CONN. CD 10/17.

Wadhams & May Co., 15 Lewis St., Hartford, Conn., CA **$777,000** Bridlepath ELEMENTARY SCHOOL, Bridlepath Rd., WEST HARTFORD, CONN. Town, Town Hall, West Hartford, Conn. Bids Oct. 9. CD 10/17, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 13 Maryland
STREETS AND ROADS
November 13 Maryland

BUILDINGS—BA

▲ **Md., Baltimore**—HOUSING—BA 11/13—City Housing Auth., 709 E. Eager St., Zone 2, Westport Homes extension, 232 brick, concrete steel units, Job MD-2-13. $3,000,000. Plans deposit $100. Frederick L. W. Moehle & Assoc., 2514 N. Charles St., Zone 18, archts. CD 8/18/50.

▲ **Pa., Phila.**—CHILDREN'S HOME—BA 11/18—Howell Lewis Shay & Assocs., archts., Packard Bldg., children's home, Broad St., for Southern Home for Children, Broad and Morris Sts. $1,067,000. Keast & Hood, 2031 Chestnut St., engrs. CD 7/29/57.

† **N. Y., Kings Point**—CHAPEL—BA 11/25—U. S. Maritime Comn., 441 G N.W., Wash., D. C., interfaith chapel, U. S. Merchant Marine Academy. $750,000. Plans deposit $100. Eggers & Higgins, 100 E. 42 St., New York, Zone 17, archts. CD 3/10.

▲ **Pa., Phila.**—APARTMENTS—BA 11/26—Phila. Housing Auth., 42 S. 15th St., 570 units low rent apartments, Hawthorne Square, 13th and Fitzwater Sts. $7,650,000. Plans deposit $50. Carroll Grisdale & Van Alen, 204 W. Rittenhouse Square, archts. Barton & Martin, 12 S. 12th St., engrs. CD 4/10/56.

BUILDINGS—SLC

▲ **N. J., Atlantic City**—MOTEL, etc.—Brighton Hotel, c/o Fisch Bros., Illinois Ave. and Boardwalk, soon lets contract 288 units motel and other bldgs., $5,000,000. Brooks & Brooks, 1616 Pacific Ave., archts. CD 10/9.

HEAVY CONSTRUCTION—LB & CA

Penn-Jersey Constr. Co., 1100 S. Broad St., Trenton, N. J., CA **$523,280**, outfall sewer and main drain, TRENTON, N. J. Hamilton Twp. Comn., 2090 Greenwood Ave., Trenton, N. J. CD 10/6, under LB.

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

Pa.—**The Lane Constr. Corp.**, Drawer 911, Meriden, Conn., CA **$3,591,025**, 16,101 ft. divided hy. c. conc. 24 ft. wide each side 60 ft. earth divisor, 8 bridges section Scranton-Binghamton Thruway (Proj. 819-2) FAI Greenfield, Benton and Lenox Twps., Lackawanna and Susquehanna Counties;

Pa.—**L. G. Defelice & Son, Inc.**, Nettleton Ave., North Haven, Conn. CA **$3,297,233**, 26,055 ft. c. conc. hy. each side 60 ft. earth divisor, 6 bridges, section Scranton-Binghamton Thruway (Proj. 820-1) FAI, Lenox and Harford Twps., Susquehanna Co. Bids Sept. 25. CD 9/30, under LB.

PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office, Bldg., Harrisburg,

Ralph V. Daniels, Inc., R. D. 1, Mechanicsburg, Pa., CA **$614,035** (5 bidders) 29,216 ft. crushed aggreg. base with bit. surf. variable in width T. R. 114 Upper Allen and Silver Spring Twps., Mechanicsburg Boro, Cumberland Co. CD 9/3, under LB.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2, Bids opened 10/21,

Md.—**Williams Constr. Co.**, Box 145, Middle River, Baltimore 20, Md., LB **$852,463** (10 bidders), grading, drainage, surf. and relocation 4.209 mi. State Rte. 165 from near Pylesville to Pennsylvania Line, H 384-4-420, Harford Co.

Md.—**Regal Constr. Co.**, Upper Marlboro, Md., LB **$156,770** (5 bidders), preliminary grading for section John Hanson Hy. from Washington Circumferential Hy. to Ardwick Rd. near Wash., D. C., P 631-37-320, Prince George Co. CD 10/8.

BUILDINGS—LB & CA

Joseph Constantino, 8108 4th Ave., Brooklyn 9, N. Y. Owner Builds. **$527,000**. 31 HOUSES, 602-686 E. 81 St., BROOKLYN, N. Y. Seelig & Finkelstein, 153 Pierrepont St., Brooklyn 2, N. Y., archts.

Mars Assocs. & Normel Constr. Co., 271 Church St., New York 13, N. Y., CA **$658,000**, general constr. for new addn. to and modernization and conversion of existing Public School 51 to JUNIOR HIGH SCHOOL, 158th St., Jackson and Trinity Aves., Bronx Boro, NEW YORK, N. Y. Bd. Educ. of City of New York, Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. Bids Sept. 23. CD 9/29, under LB.

▲ **Planet Constr. Corp.**, 11 W. 42 St., New York 36, N. Y., CA **$1,611,000**, general constr., PUBLIC SCHOOL 180, Manhattan Ave. and West 119th St., Manhattan Boro, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. Bids Sept. 30. CD 10/3, under LB.

Rudin Constr. Co., 371 E. 135th St., New York 54, N. Y., CA **$546,977**, general constr. for modernization and conversion of JUNIOR HIGH SCHOOL 99, 1st Ave. and E. 100 St., Manhattan Boro, NEW YORK, N. Y. Bd. Educ. City of New York, Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. Bids Oct. 3. CD 10/7, under LB.

Sweet Associates, Maxon Rd., Schenectady, N. Y., CA **$510,600**, ELEMENTARY SCHOOL and remodeling CENTRAL SCHOOL, SCHAGHTICOKE, N. Y. Hoosic Valley Central School, Schaghticoke, N. Y. CD 7/11/47.

▲ **Thomas Constr. Co.**, 165 Haledon Ave., Paterson, N. J., CA **$1,525,978**, general contract HIGH SCHOOL addn., Walnut St., EAST ORANGE, N. J. City, City Hall, East Orange, N. J. Emil Schmidlin, 586 Central Ave., East Orange, N. J., archt.

▲ **Jackson Park Estates**, 293 12 St., Lakewood, N. J., Separate Contracts, **$2,550,000**, RESIDENTIAL DEVELOPMENT, Leesville Rd., etc., LAKEWOOD, N. J., Paul B. West, Toms River, N. J., archt.

▲ **B. J. Lucarelli Constr. Co.**, 1100 McCarter Hy., Newark, N. J., CA **$4,683,000**, general contract 500 unit HOUSING, Lane, Temple, Northwest and Mattlock Sts., Proj. N. J. 21-5, PATERSON, N. J. Housing Auth. of City of Paterson, 29 Harrison Place, Paterson, N. J., Bids Oct. 8. CD 10/16, under LB.

Jos. Carletta & Son, 82 Chestnut Ave., Rochelle Park, N. J., Owner Builds, **$500,000**, 24 HOUSES, Chestnut and Berdan Sts., ROCHELLE PARK, N. J.

Emanuel Prince, County Club Homes, U. S. Hy. 206, South Somerville, N. J., Owner Builds, **$650,000**, 40 HOUSES, 8th and 9th sections, Country Club Estates, Rte. 206, SOMERVILLE, N. J.

▲ **Ryan Constr. Co.**, 11 West 42 St., New York, N. Y., CA **$1,500,000**, curtain wall and brick PLANT, Main St., WEST ORANGE, N. J. Organon, Inc., 20 Main St., Orange, N. J. Felheimer & Wagner, 155 E. 42 St., New York, N. Y., archts.

Owner, c/o Joseph Girsh, 1325 Walnut St., Phila., Pa. Separate Contracts. **$500,000**, 56 unit RESIDENTIAL DEVELOPMENT, Rts. 13 and 143, BRISTOL, PA. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

Norbert J. Puerta, Flourtown, Pa. Separate Contracts. $500,000. 30 RESIDENTIAL DEVELOPMENT, Meetinghouse Rd., etc., GWYNEDD VALLEY, PA. John B. Thomson, 123 Lincoln Hy., Devon, Pa., archt.

▲ **Pomeroy Realty Co.**, 426 Baltimore Pike, Springfield, Pa. Separate Contracts. **$1,200,000**, RESIDENTIAL DEVELOPMENT (30), Crum Creek, MEDIA, PA. Raymond Di Paola, Media, Pa., archt.

▲ **Linel, Inc.**, 258 Brookway Ave., Merion, Pa. Separate Contracts. **$1,000,000**, RESIDENTIAL DEVELOPMENT, Welsh Rd., PHILA., PA.

▲ **Jefferson Steel & Supply Co.**, 40 Pryor St. S. W., Atlanta, Ga., Separate Contracts, **$1,160,000**, 6 story 70 x 90 x 320 ft. concrete OFFICE BLDG., incl. parking levels below grade, 700 block N. Calvert St., BALTIMORE, MD. General Services Admin., F. Street between 18 and 19th N. W., Wash. 25, D. C., lessee. Schwab & Jewett, Federal Land Bank Bldg., Baltimore 18, Md. resident archts. Armstrong & Edwards, 26 Peachtree Pl., Atlanta, Ga., structural engrs.

Chas. R. Scrivener Co., Inc., 240 S. Hilton St., Baltimore, Md., CA Est. **$750,000**, brick, steel, concrete SHOPPING CENTER, Alameda Blvd. south of Belvedere Ave., BALTIMORE, MD. Owner, c/o contractor.

▲ **C. William Hetzer**, Marion St., Hagerstown, Md., LB **$1,394,320** (4 bidders), HIGH SCHOOL, Boonsboro, HAGERSTOWN, MD. Washington Co. Bd. Educ., Hagerstown, Md. McLeod & Ferrara, 1200 18th St. N. W., Wash., D. C., archts. Bids Oct. 21. CD 10/2.

▲ **John Tester & Son**, Clinton, Md., LB **$1,887,700**, Glendale HIGH SCHOOL, Glendale, MARLBORO, MD. Prince George's Co. Bd. Educ., Marlboro, Md. Bids Oct. 27. CD 10/10.

E. A. Baker Co., 6580 Sligo Mill Rd., Takoma Park, Md., LB **$588,000** Base Bid, (4 bidders), Richard Montgomery HIGH SCHOOL addn., ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md. Rhees Burket, 1223 Connecticut Ave. N. W., Wash., D. C., archt. Bids Oct. 23. CD 9/23, under LB.

D. M. Fontana Constr. Co., Inc., 112 A St., Wilmington, Del., CA **$586,500**, Mt. Pleasant HIGH SCHOOL addn., WILMINGTON, DEL. Mt. Pleasant Special School Dist., Duncan Rd. and Phila. Pike, Wilmington, Del. Dollar, Bonner, Blake & Manning, 1103 Madison St., Wilmington, Del., archts. Louis H. Doane, Penna. R. R. Bldg., Wilmington, Del., engr. Bids Oct. 15. CD 10/22.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 14 Tennessee
STREETS AND ROADS
November 14 Tennessee **November 21 Kentucky**

▲ **Ala., Huntsville**—BA 11/25—City, City Hall, sanitary sewer imprvs. $2,000,000. Plans deposit $50. Goodwin Engineers, 2111 7th Ave. S., Birmingham, engrs. CD 8/21/56.

▲† **Ga., Macon**—HOUSING—BA 12/1—Procurement & Production Purchase Div., Robins Air Force Base, imprvs. to 500 Wherry Housing units, Robins Air Force Base, Inv. IFB-09-603-59-50. Stevens & Wilkinson, 157 Luckie St., N.W., Atlanta, archts. CD 10/6.

▲† **Kentucky and Tennessee**—BA On Or About 1/14—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., design, manufacture, delivery, installation and testing of 4 alternating current generators for Barkley Hydroelectric Power Plant, which will be on right bank of Cumberland River 1.3 mi. north of Eureka and about 5 mi. southwest of Kuttawa; the generators will be rated 36,111 kva., 0.9 power factor, 13,800 volts, 3 phase, 60 cycles. Barkley Proj., Livingston Co., CIVENG-40-058-59-9. CD 9/5.

BUILDINGS—BA

▲† **N. C., Camp Lejeune**—CAPEHART HOUSING—BA 12/2—Dist. P. Wks. Office, Fifth Naval Dist., Naval Base, Norfolk 11, Va., 800 housing units, Marine Corps Base, Camp Lejeune, NBy (CH) 7757, Spec. 7757/57. Plans deposit $400.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5,

J. F. Allen Co., Box 49, Clarksburg, W. Va., CA **$1,148,023**, grading, draining, traffic bd. base course and b. conc. bottom and wearing courses 4.68 mi. Philippi-Belington Rd. U. S. 50, Proj. F. 117(8), Barbour

Co. Bids Oct. 7, awarded Oct. 24. CD 10/10, under LB.

SOUTH CAROLINA—State Hy. Dpt., Hotel Jefferson, Columbia,
Satterfield Constr. Co., Rte. 4, Greenwood, S. C. CA **$599,450**, b. conc. 10.761 mi. U. S. Rte. 178 from US Rte. 25 to State Rte. 246, S. C. Docket No. 24.329, F.A. Proj. F 2614 (1), Greenwood Co. Bids Aug. 19. CD 8/27, under LB.

SOUTH CAROLINA—State Hy. Dpt., Hotel Columbia, Columbia,
Cherokee, Inc., P.O. Box 1296, Columbia, S. C. CA **$728,797**, select mat., etc., 9.353 mi. Int. Rte. 26, S. C., Dockets No. 32.386.1, 32.398.1, 40.444.1 and 40.467.1, F.A. Projs. Nos. I-In-26-2 (2), I-In-126-2 (34) I-IN-26-2 (4) & I-IN-26-3 (1) Lexington and Richland Counties. CD 10/21, under LB.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Wade Hampston, Calumbia,
Green Constr. Co., Oaktown, Ind. CA **$1,547,651**, grade, etc. 9.183 mi. Int. Rte. 85, S. C. Docket No. 23.412, F.A. Proj. I-85-2 (5) I-301-1 (6) Greenville Co. Bids Sept. 16. CD 9/24, under LB.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Columbia, Columbia,
rejected bids Oct. 14, concrete paving, etc. 11.390 mi. Int. Rte. 85, S. C. Dockets No. 11.344.1 and 42.464.1, F.A. Proj. No. I-85-3 (13) I-301-2 (8), Cherokee and Spartanburg Counties, LB **$1,285,539**. CD 10/21, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,
Blount Bros. Constr. Co., 79 Commerce, Montgomery, Ala., CA **$2,840,372**, 3.221 mi. grading and draining on inter. hy. between US 90 and Old Shell Rd. Bids Sept. 26, awarded Oct. 22. CD 10/3, under LB.

LOUISIANA—State Hy. Dpt., Rm. 307, Hy. Office Bldg., Baton Rouge, Bids opened 10/22,
La.—**Ross E. Cox, General Contractor**, P.O. Box 2786, Baton Rouge, La., LB **$684,480**, Baton Rouge Expressway (Stage 3), Boyd Avenue underpass, Rte. I-410, SP No. 817-34-05, FAP No. I-410-3(3) 162, East Baton Rouge Parish. CD 10/13;
La.—**T. L. James & Co., Inc.**, Ruston, La., LB **$87,510**, furnishing, driving and loading test piles, etc. Caminada Bay Bridge, SP No. 64-01-22, Jefferson Parish.

▲ **LOUISIANA**—State Hy. Dpt., Rm. 307, Hy. Office Bldg., Baton Rouge, Bids opened 10/22,
La.—**Hall & Holland**, Montgomery, La., LB **$598,933** aggreg. type base course, etc. 6.186 mi. Maxie-Rork Hy., Rte. 13. SP No. 57-03-18 FASP No. S-247, Acadia Parish; LB **$88,779**, soil cement base course, bit. surf. treatment 3.801 mi. Church Point-Peterville Hy., Rtes. La. 1108 & 358, SP Nos. 801-34-01 & 849-18-06, Acadia and St. Landry Parishes. CD 10/13; LB **$138,910**, aggreg. type base course, 3.281 mi. Forty Arpent Rd., State Rte. SP No. 713-05-52, Lafourche Parish, CD 10/13; LB **$134,462**, stabilized clam and reef mix base course, bit. surf. treatment 2.506 mi. Percy Brown Rd., Rte. LA 648, SP No. 713-05-53, Lafourche Parish. CD 10/13;
La.—**T. L. James & Co., Inc.**, Ruston, La., LB **$708,005** wid'n. existing bit. pavement 8.011 mi. Varnado-Mississippi State Line Hy., Rte. LA 21, SP No. 30-04-16. FAP No. F-244(3), CD 10/8; LB **$118,763**, bit. hot mix application 3.928 mi. various streets, SP No. 714-05-44, Cameron Parish, CD 10/8;
La.—**R. B. Tyler Co., Inc.**, 2500 Poydras St., New Orleans, La., LB **$885,287**, wid'n. existing c. conc. pavement, etc. 13.713 mi. Nairn-Triump Hy., Rte. 23 SP Nos. 62-05-16 & 62-06 14, FASP No. S-365 (4), Plaquemine Parish;
La.—**Delta Paving Co.**, Box 8044, New Orleans, La., LB **$819,995**, wid'n. existing c. conc. pavement, surf. with hot mix, etc. 13.706 mi. Thibodaux-Houma Hy., Rte. 24, SP No. 65-04-06, FASP No. S-124 (1), Terrebonne Parish.

BUILDINGS—LB & CA

Mann-Mobley, Box 88, Fitzgerald, Ga., CA **$873,495**, 4 SCHOOL PROJECTS, SPARTA, GA. School Bldg. Auth., 244 Washington St., S.W., Atlanta, Ga. Bids Aug. 28. CD 9/5, under LB.
Brice Bldg. Co., Inc., 1021 2nd Ave. N., Birmingham, Ala. CA **$500,000**. BUS TERMINAL KNOXVILLE, TENN. Greyhound Bus Lines, 119 Jennings Ave. N. W., Knoxville, Tenn. David B. Liberman, Empire Bldg., Knoxville, Tenn., archt. Deroy S. Morgan, 806 Peachtree St., Atlanta, Ga., engr. awarded Oct. 24. CD 7/23.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—BA 11/20—City, City Hall, grade separation over Wabansia Ave. and Cortland Ave. and Chicago, Milwaukee, St. Paul & Pacific R.R., also reconstr. steel, concrete, 1,538 ft. long and 157 ft. wide bridge, W. Cortland and N. Marshfield Ave., N.W. Superhighway, Proj. I-02-2 (68), $7,000,000; 3 span steel, concrete Division St. bridge over W. Division St., N.W. Superhighway, Proj. I-02-2 (65), $600,000. CD 6/10/57.

BUILDINGS—BA

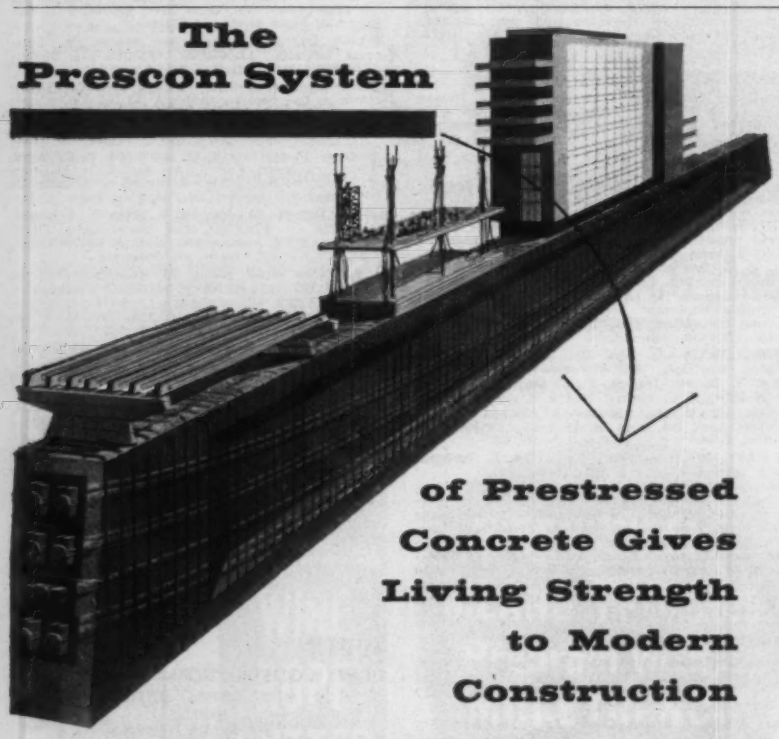
▲ **Wis., Mequon (Thiensville P.O.)** — SCHOOL — BA 11/11—Thiensvillen-Mequon Union High School Dist., high school. $1,750,000. Extended date, John J. Flad & Assocs., 2525 University Ave., Madison, archts.-engrs. CD 10/15.
▲ **Ill., Chicago**—APARTMENT, etc.—BA 11/12—I. Rich, c/o Cobrin & Assoc., 2970 Lake Shore Dr., 25 story, 56x180 ft., rein.-con., brick spandrels, air-conditioned apartment and garage. $5,000,000. Loewenberg & Loewenberg, 111 W. Monroe St., Zone 3, archts. CD 4/25/57.
▲ **Wis., Sheboygan**—SCHOOL—BA 12/2—Bd. Educ., 2 story high school. $3,630,000. Plans deposit $50. R. J. Strass, Inc., 225 E. Michigan St., Milwaukee, engr. E. A. Stubenrauch & Assocs., 712 Erie St., Sheboygan, archts. CD 1/30.

HEAVY CONSTRUCTION—LB & CA

Glenroy Constr. Co., 450 South Ritter St., Indianapolis, Ind., CA **$523,300**, 102x142 ft. masonry, concrete, steel filter plant extension, INDIANAPOLIS, IND. Indianapolis Water Co., 1220 Speedway Ave., Indianapolis 7, Ind. Bids. Oct. 1. CD 9/19.
† **Eugene Luhr & Co.**, P. O. Box 48, Columbia, Ill. CA **$525,155** (7 bidders) main dam, first stage, Carlyle Reservoir, Kaskia River, Clinton Co., approx. ½ mi. northeast of Carlyle, CIVENG-23-065-59-12, ILLINOIS. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Awarded Oct. 17. CD 9/29, under LB.
▲ **Jas. McHugh Constr. Co.**, 6449 S. Park Ave., Chicago, Ill., LB **$1,547,850** (7 bidders) 10,000 ft. 27- to 54-in. concrete pipe, canal crossing in tunnel, Southwest Interceptor Sewer, Hodgkins, CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago, Ill. Bids Oct. 23.

BUILDINGS—LB & CA

C. C. Vogel, 1891 Frebis Ave., Columbus 6, O., CA **$452,970**, ANIMAL RESEARCH FACILITY, Ohio University College of Medicine, COLUMBUS, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. CD 10/1, under LB.
Charles Vangrov & Son Constr. Co., 805 Sunnyview, Dayton, O. CA Est. **$422,000**, 3 story, 75x183 ft. brick, glass, aluminum 12 unit APARTMENT, incl. elevators, bsmnt. parking, air-conditioning, northeast corner Catalpa and Heather Drives, DAYTON, O. Heather Terrace, Inc., c/o Zollie S. Frank, 6116 N. Western St., Chicago, Ill. Paul Deneau & James R. Ahart, 31 W. 4th Bldg., Dayton, O., archts.
▲ **J. L. Simmons Co., Inc.**, 2246 N. Woodford St., Decatur, Ill., CA **$583,700**, POWER PLANT alterations, PERU, ILL. City of Peru, City Hall, Peru, Ill. Grand total $1,491,450. Bids Oct. 6. CD 10/8.
The Elliott Co., 900 N. 4 St., Jeanette, Pa., CA **$509,750**, 7,500 kw. turbine generator for power plant (Peru, Ill.);
Erie City Iron Works, 1422 East Ave., Erie, Pa. CA **$398,000**, 90,000 lb. per hr. steam generating unit for power plant (Peru, Ill.).
▲ **John E. Birch & Co.**, 10 W. St. Charles Rd., Lombard, Ill. Own Forces **$1,000,000**, 55 HOMES, incl. paving, sewers, water mains, Manchester and Birch Dr., WHEATON, ILL. Harry J. Quinn, 16162 S. Drexel Ave., South Holland, Ill., archt.
Siesel Constr. Co., 514 E. Ogden Ave., Milwaukee, Wis., CA Est. **$600,000**, SCHOOL, MILWAUKEE,
(Continued on page 126)



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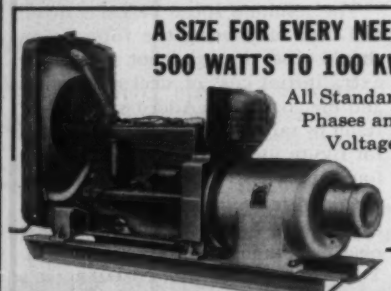

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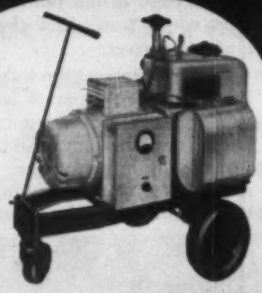

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(Continued from page 124)

WIS., St. Margaret Mary Catholic Congregation, 3900 N. 92 St., Milwaukee, Wis. Bids Oct. 15. CD 9/24.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 13 Texas November 14 Minnesota

STREETS AND ROADS

November 12, 13 Texas November 14 Minnesota

† **S. D., Rapid City**—NCO MESS—BA 11/25—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., constr. NCO mess, Ellsworth Air Force Base, ENG-25-066-59-36. $400,000-$500,000. CD 9/11.

† **Neb., Lincoln**—READINESS CREW BLDG.—BA 11/26—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, constr. readiness crew bldg., Lincoln Air Force Base, ENG-25-066-59-35. $600,000-$800,000. CD 9/9.

HEAVY CONSTRUCTION—LB & CA

† **U. S. Eng.**, 1709 Jackson St., Omaha 2, Neb., cancelled bids to have been opened Oct. 22, constr. ADC Ammo Storage Area and alert hangar protection, Sioux City Air Force Base, ENG-25-066-59-6, SIOUX CITY, IOWA. $800,000-$1,000,000. CD 10/2.

Cosmo Constr. Co., 1710 N. Broadway, Oklahoma City, Okla., LB $466,623, est. $495,727, grading 2.5 mi. embankment for San Francisco Ry., ENG-34-066-59-12, Keystone Reservoir, OKLAHOMA. U. S. Eng., Box 61, Tulsa, Okla. Bids Oct. 14. CD 9/18; **Austin Bridge Co.**, 1813 Clarence St., Dallas, Tex., LB $428,135, est. $440,289, 3 bridges for San Francisco Ry., ENG-34-066-59-12, Keystone Reservoir (Oklahoma).

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Cooper & Woodruff, Inc.**, 204 Mays Bldg., Amarillo, Tex., CA $636,528, grade, etc., 20.019 mi. Hy. US 62 and 82, Proj. F 443 (29) & F 443 (30) Lubbock and Crosby Counties; CA $1,070,309, grade, etc., 16.199 mi. Hy. US 287, Proj. F 523 (8) & F 438 (31), Armstrong Co.;

Tex.—**Hugh McMillan, Inc.**, Box 1612, El Paso, Tex., CA $974,272, flex. base, etc., 10.396 mi. Hy. IH 10, Proj. I 10-1 (8) 0, El Paso Co.;

Tex.—**J. O. Boswell**, 311 Paris Ave., Lubbock, Tex., CA $703,285, grade, etc., 8.851 mi. Hy. US 62, Proj. F 1104 (6), Lubbock Co.;

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., CA $597,335, grade, etc., 6.335 mi. Hy. US 281, Proj. F 1011 (4) Hamilton, Coryell and Lampasas Counties. Grand total $3,981,782. Bids Oct. 14. CD 10/17, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Century Constr. Co.**, Box 5175, Houston, Tex., CA $610,255, grade, structures, etc., 6.939 mi. Hy. US 290, Proj. U 535 (9), Harris Co.;

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., CA $915,931, wid'n. pavement, etc., 27.453 mi. Hy. US 281, Proj. DF 2 (5) DF 429 (23), etc., Brooks and Hidalgo Counties;

Tex.—**Ivan Dement, Inc.**, Box 1787, Amarillo, Tex., CA $562,280, grade, etc., 14.293 mi. Hy. SH 152 and FM 2391, Proj. S 661 (3) & S 2324 (1), Gray and Roberts Counties;

Tex.—**R. B. Butler, Inc.**, Box 471, Bryan, Tex. CA $1,176,516, grade, etc. 5.478 mi. Hy. ST 71 and 95, Proj. F 283 (5) & S 198 (3) Bastrop Co.;

Tex.—**Austin Bridge Co.**, 1000 Singleton St., Dallas, Tex. and **Worth Constr. Co.**, 5549 James Ave., Fort Worth, Tex. CA $1,995,315, grade, etc. 7.407 mi. Hy. IH 30. Proj. I 30-2 (7) 57, Hopkins Co.;

Tex.—**Collins Constr. Co. of Texas**, P. O. Box 1192, Austin, Tex. CA $621,007, grade, etc. 4.522 mi. Hy. Loop 293, Proj. U. 1115 (1) Travis Co.;

Tex.—**Gilvin-Terrill, Inc.**, Box 2268, Amarillo, Tex., CA $617,577, grade, etc. 14.943 mi. Hy. 287, Proj. F 546 (27) Swisher Co. Grand total $6,498,881. Bids Oct. 15. CD 10/20, under LB.

Sira & Payne, Box 11605, Dallas, Tex., LB $789,471, est. $600,000, dam, spillway, bridges, access roads, LUBBOCK, TEX. Lubbock County WC&ID No. 1, 922 Texas Ave., Lubbock, Tex. Bids Oct. 21. CD 10/8.

WYOMING—State Hy. Comn., J. R. Bromley, supt., Cheyenne.

Garton & Garton, 1939 E. 18 St., Cheyenne, Wyo., CA $764,692, 2 bridges, twin 3 continuous steel plate girder spans, twin 3 continuous WF girder span, separation structure, consisting of single 4 continuous WF girder spans, 4 mach. pass structures, interchange structure and separation structure each consisting of twin 3 continuous rein.-conc. slab spans and misc. work on 6.302 mi. of 4-lane road on Moorcroft-Sundance Rd., Proj. No. I-90-4(7)185, Crook Co. Bids Oct. 23, awarded Oct. 24. CD 10/17.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,

Colo.—**Dominic Leone Constr. Co.**, 818 Oak St., Trinidad, Colo., CA $398,106, est. $464,000, stabilization, structures and plant mixed asph. surf. 13.969 mi. Colo. Proj. No. DF 001-5(11) Bent and Prowers Counties;

Colo.—**Schmidt Constr. Co.**, 8150 West 49 Ave., Arvada, Colo., CA $438,825, est. $474,000, stabilization and plant mixed asph. surf. 18.616 mi. Colo. Proj. No DF-016-1(8) Park Co. Bids Oct. 24. CD 10/17

Utilities Eng. & Constr. Co., 1909 S. Cherokee, Denver, Colo., CA $824,433, sewage treatment plant, COLORADO SPRINGS, COLO. City, Municipal Utilities Bldg., Colorado Springs, Colo. Bids Sept. 5, awarded Oct. 20. CD 10/9, under LB.

▲ **NEW MEXICO**—State Hy. Comn., State Hy. Bldg., Cerrillos Rd., Santa Fe,

N. M.—**Wayne A. Lowdermilk, Inc.**, P. O. Box 1165, Espanola, N. M., and **Gardner Constr. Co.**, P. O. Box

360, Glenwood Springs, Colo., CA **$1,408,170**, est. $1,649,332, Raton Bypass, South End, Proj. No. I-025-6(1) 448, Colfax Co.;

N. M.—**Longenbaugh & Coe, Inc.**, P. O. Box 6056, Albuquerque, N. M., CA **$1,856,490**, est. $2,189,244, Tijeras Canyon to Juan Tabo, Proj. No. I-040-3(8)169, Bernalillo Co.;

N. M.—**Brown Constr. Co.**, 3525 4 St. N. W., Albuquerque, N. M., CA **$616,997**, est. $787,999, Ranchos de Taos-Pilar, Proj. No. DF-051-1(9), Taos Co.;

N. M.—**W. A. Hamilton Jr. Constr. Co.**, Gallup, N. M., CA **$520,705**, est. $571,558, Lumberton-Monero, Proj. No. DS-1525(3), Rio Arriba Co. Bids Oct. 24. Grand total $4,402,362. CD 10/15.

BUILDINGS—LB & CA

D. Witcher, Inc., 412 Title Insurance Bldg., Minneapolis, Minn., LB **$690,690** (11 bidders), general constr. PHYSICAL EDUCATION and INDUSTRIAL ARTS BLDG., at **Bemidji State College, BEMIDJI, MINN.** State Dpt. Admin., 19 State Capitol St., St. Paul, Minn. Bids Oct. 23. CD 9/25.

Swedberg Constr. Co., Detroit Lakes, Minn., LB **$697,970** (6 bidders), general contract DISTRICT SHOPS and OFFICE BLDG. for Minnesota Hy. Dpt., DETROIT LAKES, MINN. State Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Oct. 23. CD 10/2.

B. Neitge Constr. Co., Mankato, Minn., CA **$655,000** general constr. ELEMENTARY SCHOOL, MANKATO, MINN. Bd. Educ., Mankato, Minn. Bids Sept. 26. CD 10/2, under LB.

Power Service Corp., Wesley Temple Bldg., Minneapolis, Minn., LB **$641,700** (5 bidders), furnish, install STEAM GENERATING UNIT at municipal power plant, WILLMAR, MINN. City, Municipal Utilities Comn., Willmar, Minn. Bids Oct. 22. CD 9/25.

R. C. Elvin Co., 2517 Nicollet Ave., Minneapolis, Minn., CA **$598,000**, general constr. 25-bed HOSPITAL and 40-bed NURSING HOME, CONVENT and CHAPEL, WINSTED, MINN. Sisters of the Order of St. Benedict, St. Paul's Priory, 301 Summit Ave., St. Paul, Minn. Bids June 5. CD 6/18, under LB.

▲ **G. E. Bass Constr. Co.**, 2715 N. State St., Jackson, Miss., CA Est. **$2,500,000**. 120,000 sq. ft. floor masonry, concrete and steel Clark's DEPARTMENT STORE, FORT WORTH, TEX. R. E. Dumas Milner, 3691 Canton Rd., Jackson, Miss. Awarded Oct. 20. CD 10/16.

▲ **Allen Field Enterprises, Inc.**, 5227 Jensen Dr., Houston, Tex. Owner Builds. **$1,500,000**, 170 unit APARTMENT, 3800 Block N. Braeswood Blvd., HOUSTON, TEX. (Correction—owner's address). CD 9/18, under CA.

Buck Realty Co., 4708 Griggs St., Houston, Tex. Owner Builds. **$405,000**, 30 DWELLINGS; **$351,000** 26 DWELLINGS, Golfview Manor Subdivision, HOUSTON, TEX. CD 10/13.

West Constr. Co., 3010 McKinney St., Houston, Tex. CA **$760,000**, SHOPPING CENTER, new section at Old Richmond Rd. and Wesleyan St., HOUSTON, TEX. Montclair Shopping Center, Russell W. Nix, 6407 Harrisburg Blvd., Houston, Tex. CD 8/7.

J. W. Cooper Constr. Co., Inc., Drawer 3947, Odessa, Tex. CA **$782,500**. Base Bid HIGH SCHOOL and BUS BARN, IRAAN and SHEFFIELD, TEX. Sheffield Ind. School Dist., Sheffield, Tex. Bids Oct. 14. CD 10/7.

M. Z. Collins Constr. Co., Box 815-A, Austin 1, Tex. LB **$568,333** Base Bid (7 bidders) GYMNASIUM and INDUSTRIAL ARTS BLDGS., SAN MARCOS, TEX. Southwest Texas State Teachers College, San Marcos, Tex. Frank T. Drought, 342 W. Woodlawn Ave., San Antonio, Tex., engrs. Bids Oct. 21. CD 7/25/57.

Clanahan Constr. Co., Box 567, Tyler, Tex. CA **$754,374** (Base Contract) JUNIOR HIGH SCHOOL, TYLER, TEX. Tyler Ind. School Dist., Tyler, Tex. Bids Oct. 8. CD 10/20, under LB.

Lowe Constr. Co., 2325 9th Ave. N., Billings, Mont. LB **$772,000**, general constr. HIGH SCHOOL and ELEMENTARY SCHOOL addns., HARDIN, MONT. School Dist., 17-H, Hardin, Mont. Bids Oct. 17. CD 10/1.

▲ **F. R. Orr Constr. Co.**, 4414 Vine, Denver, Colo., CA **$2,603,723**, 1, 2, and 3 story, 256,404 sq. ft. Thomas Jefferson Junior-Senior HIGH SCHOOL, South Holly St. and E. Mansfield Ave., DENVER, COLO., School Dist. No. 1, 414 14th St., Denver, Colo. Bids Oct. 15. CD 10/21, under LB;
Natkin & Co., 2201 S. Delaware, Denver, Colo., CA **$766,928** mechanical work for Thomas Jefferson Junior-Senior High School, (Denver, Colo.).

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

December 3 California

† **Calif., Point Mugu**—INSTRUMENTATION BLDG.—BA 11/20—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, instrumentation bldg. addn. at Naval Air Missile Test Center. $500,000. CD 9/17/57.

Calif., Los Angeles—BA 11/21—Los Angeles Co. Flood Control Dist., 2250 Alcazar St., constr. Storm Drain Bond Issue Proj. 22, Claremont Storm Drain, Pomona. $912,300. Plans deposit $3.50. CD 11/7/52.

▲ **Wash., Seattle**—BA 1/14—Bd. P. Wks., Tolt River Water Supply Development, incl. constr. earthfill dam, $7,200,000; clearing reservoir basin, $1,500,000; clearing, grading 6.5 mi. pipe line right-of-way, $300,000 and constr. bridge, $100,000. CD 11/23/56.

BUILDINGS—BA

▲ **Idaho, Lewiston**—SCHOOLS—BA 11/13—School Bd., 2 story, 69x238 ft. classroom bldg. and 1 story, 59x91 ft. admin. bldg. for Lewiston Junior High School; 2 story, 69x206 ft. classroom bldg. and 1 story, 59x91 ft. admin. bldg. for Lewiston Orchards Junior High School; 175x185 ft., masonry, frame gymnasium-cafeteria bldg. at each school. $1,450,000. H. Richardson, Weisgerber Bldg., engr. CD 5/20.

▲ **Wash., Seattle**—SCHOOL—BA 11/20—School Dist. No. 1, 815 4 Ave. N., Lincoln High School addns. $1,320,957. Plans deposit $50. Naramore, Bain, Brady & Johanson, 904 7 Ave., archts. CD 11/9/56.

▲ **Calif., Los Angeles**—SCHOOL—BA 11/21—Bd. Educ., 1425 S. San Pedro, constr. Portola Junior High School. $2,400,000. CD 11/15.

HEAVY CONSTRUCTION—LB & CA

† **Bolivar & Assocs.**, 2370 Fairview North, Seattle, Wash., CA **$993,458**, est. $1,283,906, dredging Dry Pass, 126,000 cu. yd. common excav. and 19,560 cu. yd. ledge rock excav. to provide 70 ft. channel to dept. of minus 12 ft. Rocky Pass, 12,295 cu. yd. and 4,880 cu. yd. ledge rock for 150 ft. wide channel, Dry Pass and Rocky Pass, CIVENG-59-1, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Sept. 25, awarded Oct. 22. CD 9/29, under LB.

IDAHO—State Hy. Dpt., Boise,
Aslett Constr. Co., Twin Falls, Idaho, CA **$640,231**, constr. 4-lane divided roadway, drainage structures, 2 in. max. crushed gravel base, 3 concrete underpasses, and two 23 ft. concrete bridges on 2.984 mi. Interstate No. 15, Bingham Co., Bids Oct. 7, awarded Oct. 9, CD 10/15, under LB.

IDAHO—State Hy. Dpt., Boise, Bids opened 10/21,
Idaho—**Marian J. Hess Constr. Co.**, Malad, Idaho, LB **$827,659**, constr. roadway, drainage structures, plant-mix bit. surf. and 25.6 ft. and 40 ft. concrete bridges on 6.299 mi. State No. 44, Ada Co.;
Idaho—**Wardle Bros. Excavating Co.**, 201 N. 30 St., Boise, Idaho, LB **$96,450**, constr. roadway, roadmix, bit. surf. and 28 ft. concrete bridge on 5.176 mi. Pasadena Valley road, Elmore Co. CD 10/9.

▲ **CALIFORNIA**—State Div. Hys., 11120 N. St., Sacramento, Bids opened 10/22,
Calif.—**Thomas Constr. Co.**, 4665 E. Hedges Ave., Fresno, Calif. LB **$129,129** (11 bidders), roadway repairs and drainage revisions at 5 locations, State Hy. Rte. 107 between Niles and Sunol, IV-A Ala-107, Fmt, A. Alameda Co.;
Calif.—**Baldwin Contg. Co., Inc.**, 9th and Yuba Sts., Marysville, Calif. LB **$364,783** (7 bidders), reconstr., wid'n. 6.8 mi. FAS Co. Rd. 528 (Clark Rd.) between Clear Creek and Pearson Rd. in Paradise, III-But-528, Butte Co.;
Calif.—**Antioch Paving Co., Inc.**, P.O. Box 640, Antioch, Calif. LB **$141,080** (9 bidders), reconstr. 1.8 mi. FAS Co. Rd. 1255 (Wilbur Ave.) between Atchison, Topeka & Santa Fe R.R. and Bridgehead Rd. near Antioch, initial 2 lanes of future 4 lane county expressway, IV.C.C.-1255, Contra Costa Co.;
Calif.—**McCammon-Wunderlich Co. & Wunderlich Contg. Co.**, P.O. Box 359, Palo Alto, Calif., LB **$564,447** (8 bidders), grade, surf. to constr. 2.7 mi. modern 2 lane hy. State Sign Rte. 29 through Yountville, incl. bridge to take freeway over Calif. St. and interchange facilities at entrance to State Veterans Home, the work to provide initial 2 lanes of future 4 lane expressway, IV-Nap-49-B, Napa Co.;
Calif.—**Ghilotti Bros., Inc.**, 629 San Francisco Blvd., San Rafael, Calif. LB **$78,696** (4 bidders), roadway repairs at 13 locations State Sign Rte. 1 between US Hy. 101 and Marshall, IV-Mrn-56-A, C, D. Marin Co.;
Calif.—**Fresno Paving Co.**, 4139 N. Valentine St., Fresno, Calif. LB **$114,875** (5 bidders), grade, surf. to realign and modernize 1.2 mi. FAS Co. Rd. 962 Mader-North Fork Rd. at Fingold about 6 mi. north of O'Neals, VI-Mad-962, Madera Co.;
Calif.—**Rice Bros., Inc.**, P.O. Box 886, Fresno, Calif. LB **$578,320** (10 bidders) grade, surf. to reconstr. 8.1 mi. FAS Co. Rd. 1230 (James Rd.) west of Kerman from Adams Ave. through town of Tranquility, to State Sign Rte. 180 (Whites Bridge Rd.) VI-Fre-1230, Fresno Co. CD 9/25.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles. Bids opened 10/23,
Calif.—**Griffith Co.**, 1060 S. Broadway, Los Angeles 15, Calif. LB **$580,838** (7 bidders) grade, paving for 3.1 mi. to constr. 4 lane divided expressway FAS Co. Rd. 852 (Valley Blvd.) between Nogales St. and Ferrero Lane near La Puente. VII-L. A.-852, Los Angeles Co.;
Calif.—**Fredrickson & Watson Constr. Co.**, 873 81st Ave., Oakland, Calif. LB **$87,777** (7 bidders) grade, surf. parking lot at San Buenaventura Beach State Park near Ventura, VII-Ven-State Park, Ventura Co. CD 9/25.

Matt J. Zaich, 6828 Farmdale Ave., North Hollywood, Calif. LB **$764,094** (12 bidders), storm drains, Bond Issue Proj. 106, Haskell Ave., storm drain, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Oct. 17. CD 9/23.

S & Q Constr. Co., 48 S. Linden St., South San Francisco, Calif. CA **$945,313**. sewage works enlargements; pumping plant addns., sewage treatment plant enlargements, emergency outfall line, force main, REDWOOD CITY, CALIF. City, City Hall, Redwood City, Calif. CD 9/18, under LB.

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif. CA **$539,576**, sewers, manholes, sewage pumping and treatment plant in West Greenback Lane Assessment Distr. north of SACRAMENTO, CALIF. West Greenback Lane Sewer Assessment District, c/o

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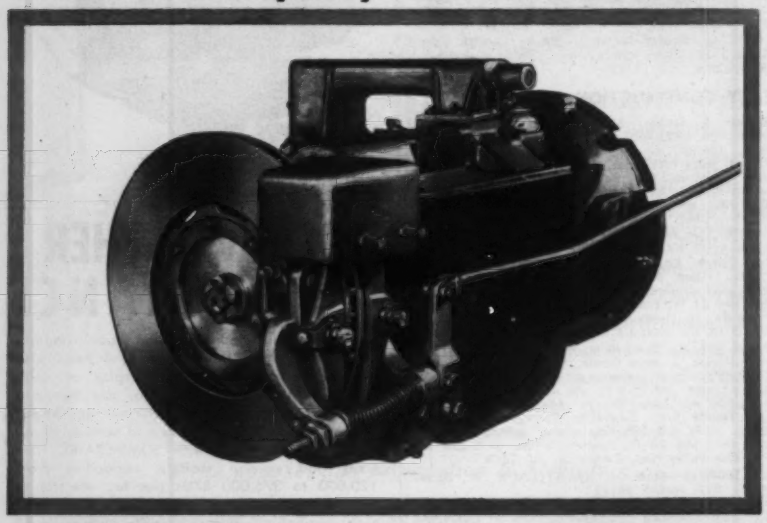
You Get Positive Protection Against Runaway or Parking Accidents When You Specify TRU-STOP Brakes



TRU-STOP brakes operate directly on the drive shaft. This means that they are not only excellent parking brakes, but dependable emergency service brakes as well. There's no dangerous self-energizing. TRU-STOP brakes have the surplus capacity for repeated use as an auxiliary to service brakes.

100% Ventilation Minimizes Fading

Brake efficiency depends on ability to dissipate heat rapidly and so prevent fading. TRU-STOP brakes are 100% ventilated. Discs are exposed to air even while braking. The TRU-STOP ventilation system circulates air *between* the disc plates.

Longer Life with Uniform Brake Pressure

The discs of TRU-STOP brakes are squeezed between the flat surfaces of the shoes. The brake lever operates both the front and rear lever arms simultaneously, and pressure is exerted on the center of each shoe. This puts the entire lining surface in contact, provides for even wear. TRU-STOP brake linings are *easy* to replace.

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County Pub. Wks. Dpt., 827-7th St., Sacramento, Calif. Bids Oct. 8, awarded Oct. 22. CD 10/15, under LB.

BUILDINGS—LB & CA

Cawdrey-Vemo, Inc., 3601 Fremont Ave., Seattle 3, Wash., CA $781,192 (7 bidders), 25,000 sq. ft. rein.-con. steel frame HOSPITAL addn., EVERETT, WASH. Everett General Hospital, Everett, Wash. Bids Oct. 24. CD 10/13.

Secrest & Fish, Inc., 1909 W. Whittier Blvd., Whittier, Calif., LB $589,762 (6 bidders), 3 story, rein.-con. SCIENCE BLDG., Claremont College, CLAREMONT, CALIF. Claremont College, Associated Colleges, Claremont, Calif. Heitschmidt & Thompson, 617 W. 7th St., Los Angeles, Calif., archts. Bids Oct. 21.

Alondra Investment Co., 15630 Crenshaw Blvd., Gardena, Calif. CA $908,050, 146 stucco DWELLINGS, Tr. 3309, LA HABRA, CALIF. La Habra Investments, Inc., 15630 Crenshaw Blvd., Gardena, Calif.

▲ Crown Constr. Co., 5059 W. Pico Blvd., Los Angeles, Calif. CA $2,369,871, Sepulveda JUNIOR HIGH SCHOOL, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Sept. 5. CD 9/11, under LB.

▲ Fryar Constr. Co., 550 S. Fairoaks St., Pasadena, Calif. LB $1,319,000 (7 bidders), constr. CLASSROOM BUILDING at Alta Loma, ONTARIO, CALIF. Chaffey College, 1245 N. Euclid St., Ontario, Calif. Bids Oct. 23. CD 10/6.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 18 New Brunswick-Quebec

STREETS AND ROADS

November 12, 27 Ontario

November 13 Northwest Territories

Saskatchewan—BA 11/13—Dpt. Agriculture, Prairie Farm Rehabilitation Admin., c/o G. E. McKenzie, dir., 504 Motherwell Bldg., Regina, South Saskatchewan River Dam proj., incl., engineering bldg., soil laboratory, staff house, mess halls, warehouse and 38 houses for headquarters site, near town of Elbow. $650,000. Plans deposit $25. CD 2/5/47.

BUILDINGS—BA

▲ Ont., Lindsay—HOSPITAL—BA 11/18—Bd. Governors, Ross Memorial Hospital (selected list of bidders) hospital addns. alterations. $1,150,000. Marani & Morris, 1250 Bay St., Toronto, archts. CD 1/17.

▲ B. C., North Vancouver—HOSPITAL—BA 11/23—North and West Vancouver Hospital Society, 5 story, 18,800 sq. ft. steel frame hospital and 3 story, 10,000 sq. ft. rein.-con. services sect., $4,500,000. Plans deposit $100. Underwood, McKinley, Cameron, 1264 W. Pender St., Vancouver, archts. F. Wavell Urry, 1264 W. Pender St., Vancouver, structural engr. Simpson & McGregor, 1690 W. Broadway, Vancouver, electrical engr. W. W. Thompson, Vancouver, mechanical and plumbing engr. CD 1/5/55.

▲ Newfoundland, Saint Johns—TERMINAL WHARF—BA 11/26—Dpt. Transport, Hunter Bldg., Ottawa, Ont., terminal wharf, $1,000,000.

BUILDINGS—LB & CA

▲ Burns & Dutton Concrete & Constr. Co. Ltd., 5720 4th St. S.E., Calgary, Alta., LB $2,080,000 (12 bidders) POST OFFICE TERMINAL, 9th Ave. and 1st St. W., CALGARY, ALTA. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 22. CD 9/16.

▲ Thomas Fuller Constr. Co., Ltd., 199 Richmond Rd., Ottawa, Ont., LB $7,890,336 (27 bidders) 6 story, bsmnt., 4 wings, cruciform design, 350 bed addn. MEDICAL CENTER and HOSPITAL, poured concrete fdn. for armed forces, Dpt. Veterans' Affairs and the Royal Canadian Mounted Police, OTTAWA, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Oct. 15. CD 10/6.

▲ Leon M. Adler, 2200 Ward St., St. Laurent, Montreal, Que. CA Est. $1,500,000, partially 2 story, 118x619 ft. SHOPPING CENTER, Sherbrooke St. E., MONTREAL, QUE. Maisonneuve Shopping Centre, c/o Reuben Fisher, archt., 3177 St. Sulpice St., Montreal, Que. Awarded Oct. 20. CD 10/22.

▲ Magill Constr. Ltd., 400 Gratton St., St. Laurent, Montreal, Que. LB $1,386,000 (11 bidders) HIGH SCHOOL, Sherbrooke St. E., MONTREAL, QUE. Montreal Protestant Bd. School Comrs., 3460 McTavish St., Montreal, Que. Bids Oct. 14. CD 9/10.

LATIN AMERICA

BUILDINGS—BA

▲ Panama-Panama City—HOSPITAL—BA 12/10—Caja de Seguro Social, Panama City, 9 story, 260 bed hospital. $2,000,000. CD 8/6.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ General Electric Atomic Power Equipment Dpt., River Rd., Schenectady 1, N. Y., U.S.A., CA 150,000 kw. atomic POWER PLANT at Ponta Fiume, Gargliano River, near NAPLES, ITALY. Societa Electronucleare Nazionale, Naples, Italy. Ebasco Services, Inc., 2 Rector St., New York, N. Y., U.S.A., engr.

(Proposal Advertisement see pp. 140 to 142)

Road Construction Costs Down

BPR index indicates costs are stabilizing; but officials warn climb could be renewed

The rise in construction costs of the 41,000 mile interstate highway system appears to have stopped—at least temporarily.

The Bureau of Public Roads, administrator of the federal highway program, reports costs in the third quarter dropped 1.7% below the second quarter. The index reading—139.2, based on 1946 = 100—is at the lowest point in two years. The present reading means that $100 worth of 1946 highway cost $139.20 in September.

The U. S. Composite Mile Bid Price Index hit an all-time high of 143.4 in the fourth quarter of last year. The latest reading is 3% below the 1957 final quarter value.

• **Just temporary**—BPR says the "very small fluctuations . . . indicate a current trend of stabilization in highway construction costs." This may be a short-lived condition. Bureau officials are concerned that costs may start to rise again as the business recovery continues.

With prices now at the lowest point since the second quarter of 1956, all the rise in bid prices during the first 18 months of the interstate program is wiped out.

Average unit prices of all but one item included in the BPR index dropped in this year's third quarter. Reinforcing steel was the lone exception. Reinforcing steel prices were steady in the third quarter, averaging 13 cents per pound. This is the lowest since early 1956.

Biggest decrease is in structural steel—down 3.1% from the second quarter to an average of 18.6 cents per pound. This is the lowest since 1955.

Common excavation dipped 2.7% to 39 cents per cu yd. Concrete pavement costs slipped 1.5% to $3.97 per sq yd. Structural concrete bid prices averaged slightly under the second quarter, moving down 0.5% to $54.55 cu yd.

• **State reports confirmed**—BPR's index trend confirms similar trends reported by the California Division of Highways and South Dakota's Highway Department.

Highway contractors trimmed bid prices for California state highway jobs to the lowest point since early 1956. Bid prices in the third quarter were 1.1% below the second quarter and 4% below 1957's third quarter.

This situation exists despite a smaller number of bidders per project. In September the average was 5.6. This is up from a two-year low of 4.5 in May and 5.4 in the second quarter. But the average number of contractors bidding per project is well under the first quarter of this year. Then the average hit a seven-year high of 11.4 per job. In January the average was 9.4 bidders per job.

Ferocious competition developed in the first quarter because bidders had only 88 projects to go after. In the second quarter there were 200 jobs offered. The number was upped to 204 in the third quarter.

• **Interest in bigger jobs**—Contractor interest centered on the larger projects ($1 million or more) in the third quarter. The number of these projects increased to 25 compared to 11 in the first quarter and 15 in the second quarter. When the number of projects costing $1 million or more rose in the third quarter, the average number of bidders for such jobs also increased. The number went to 8.5 from 8.2 in the second quarter. In the third quarter, fewer contractors bid on jobs in the $250,000 to $1 million class.

The number of bidders on projects costing less than $250,000 increased in the third quarter.

• **Sharpest drop**—In South Dakota, contractor bid prices on state highway jobs dropped in the third quarter to a three-year low. Prices in the July-September period were 18% below the second quarter and 12% below one year ago.

Responsible for the drop were third quarter declines in plant mix bituminous surfacing, Class "A" concrete, structural steel and liquid asphalt. Plant mix bituminous surface dove 30%; Class "A" concrete, 17%; structural steel, 11% and liquid asphalt, 5%. Average unit prices rose 27% for excavation and 3% for reinforcing steel.

Texas Brings Price-Fix Suits

Six Texas companies are accused of fixing prices of oyster shell (a road-building material) sold to Texas cities and counties and to the State Highway Department.

The anti-trust action brought by the state's attorney general, Will Wilson, charges the firms entered "into agreements and conspiracies" to:

• Fix, maintain and increase the price of shell and related products in the Houston area.

• Prevent and lessen competition in the processing, transporting and marketing of shell and related products within the Houston area.

• Fix and maintain standards and figures whereby the price of shell and related products was affected, controlled and established within the Houston area.

Defendants in the action are Parker Brothers & Co., Horton & Horton, Mayo Shell Corp., McDonough Co., John Young Co., Inc., and W. D. Haden Co.

According to Mr. Wilson the firms developed a "master agreement" that provided for submission by the defendants of identical sealed bids to the State of Texas, Harris County, Galveston County, Houston and local governments.

The action says agreement was reached between the companies sometime before January 1, 1954. Since then, there were more than 400 separate instances of identical bids, Mr. Wilson says.

According to the attorney general, more than $1 million of oyster shell is sold through public bidding each year in Harris County (Houston) alone.

The state asks that the companies be prohibited from making price-fixing agreements and that they pay civil penalties from January 1, 1954, to last month. Penalties could run from $50 to $1,500 a day during the period the offenses allegedly occurred.

Mr. Wilson has also brought anti-trust suits against seven chemical companies. They are charged with uniform bidding and price-fixing in the sale of liquid chlorine for water purification.

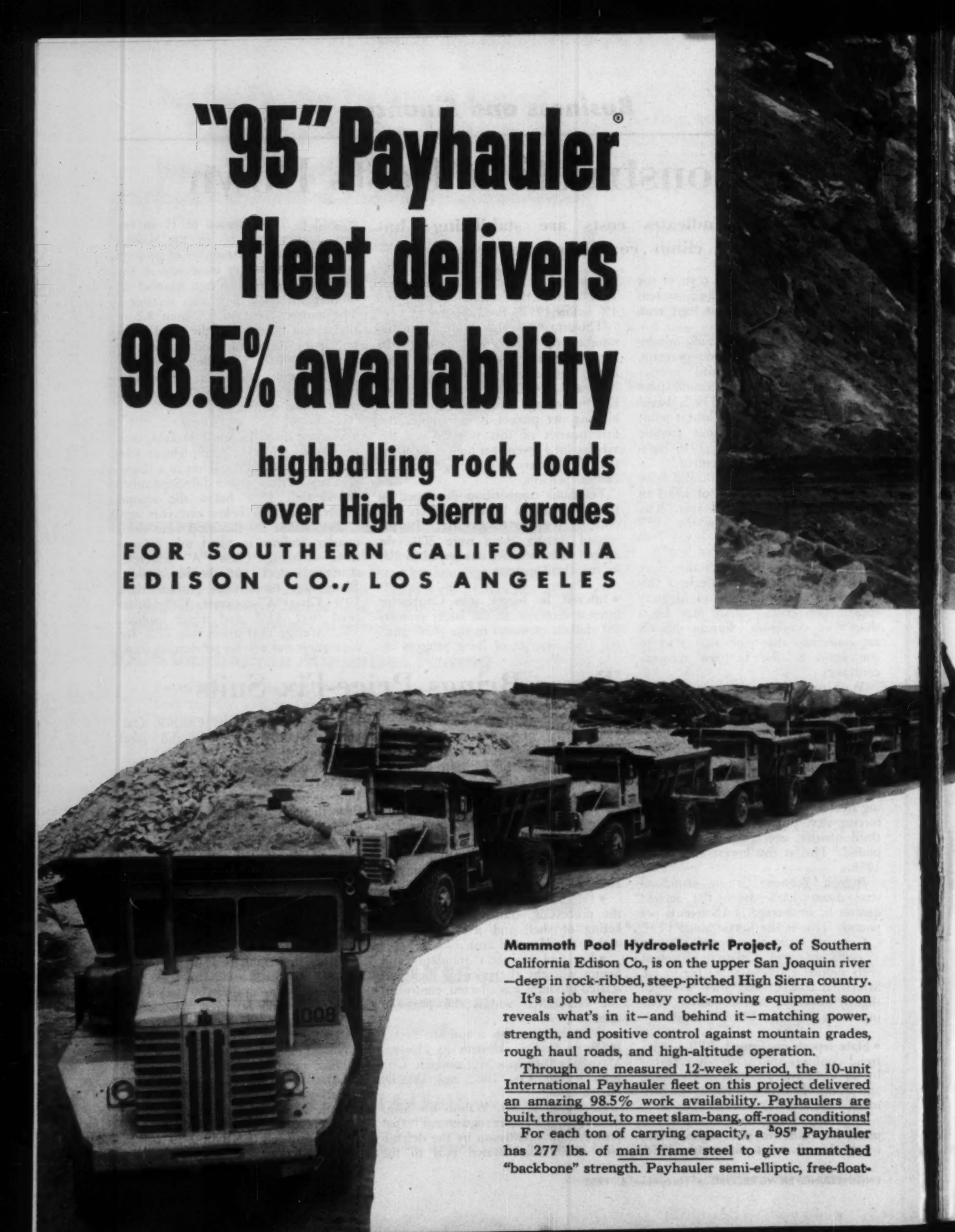
Earlier statements by Mr. Wilson indicate similar charges may be brought against electric transformer and lime production firms (ENR June 19, p. 32).

(B&F continued on page 132)

"95" Payhauler® fleet delivers 98.5% availability

highballing rock loads over High Sierra grades

FOR SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES

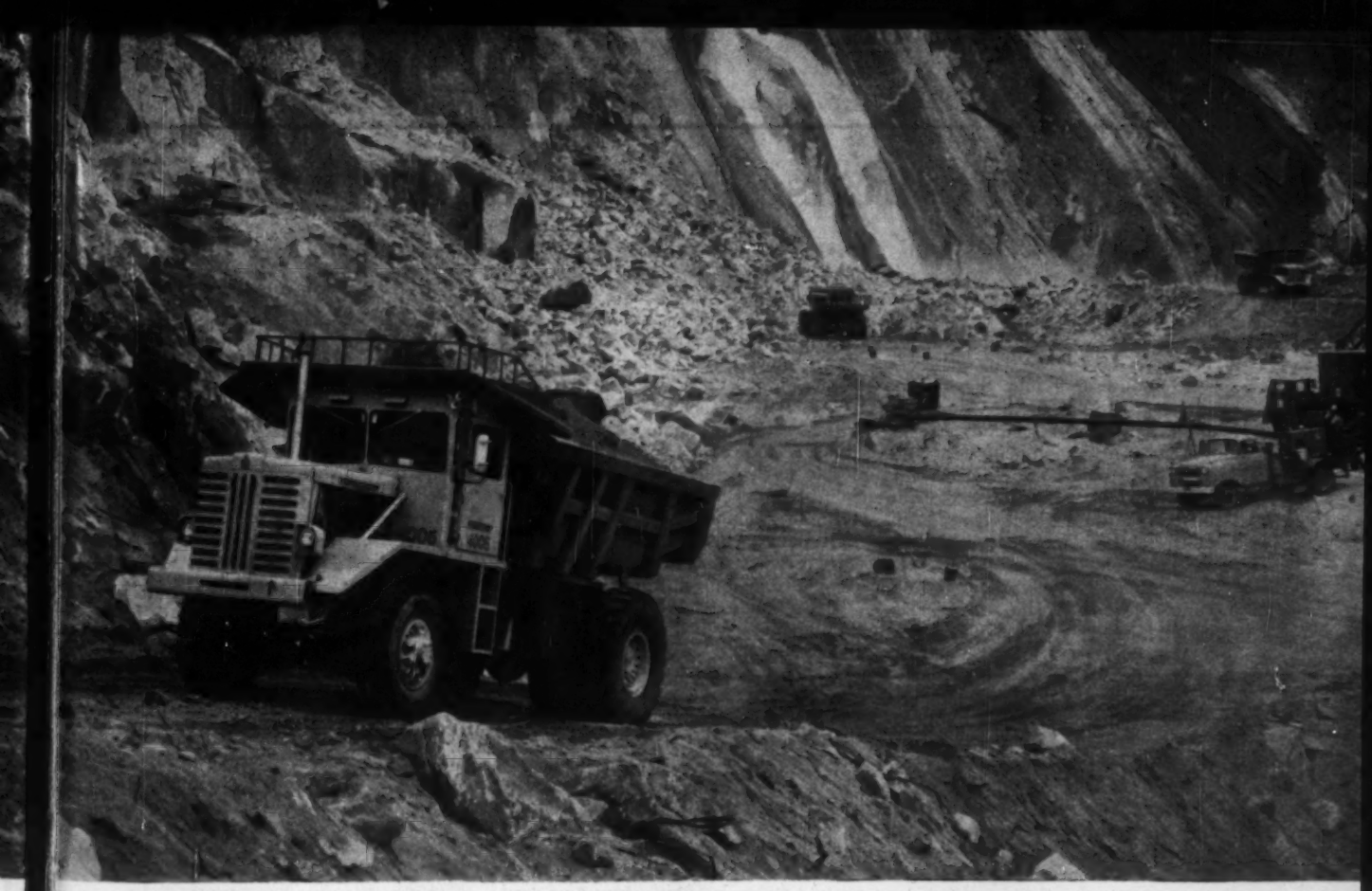


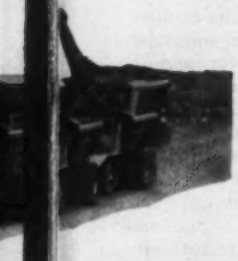
Mammoth Pool Hydroelectric Project, of Southern California Edison Co., is on the upper San Joaquin river —deep in rock-ribbed, steep-pitched High Sierra country.

It's a job where heavy rock-moving equipment soon reveals what's in it—and behind it—matching power, strength, and positive control against mountain grades, rough haul roads, and high-altitude operation.

Through one measured 12-week period, the 10-unit International Payhauler fleet on this project delivered an amazing 98.5% work availability. Payhaulers are built, throughout, to meet slam-bang, off-road conditions!

For each ton of carrying capacity, a "95" Payhauler has 277 lbs. of main frame steel to give unmatched "backbone" strength. Payhauler semi-elliptic, free-float-

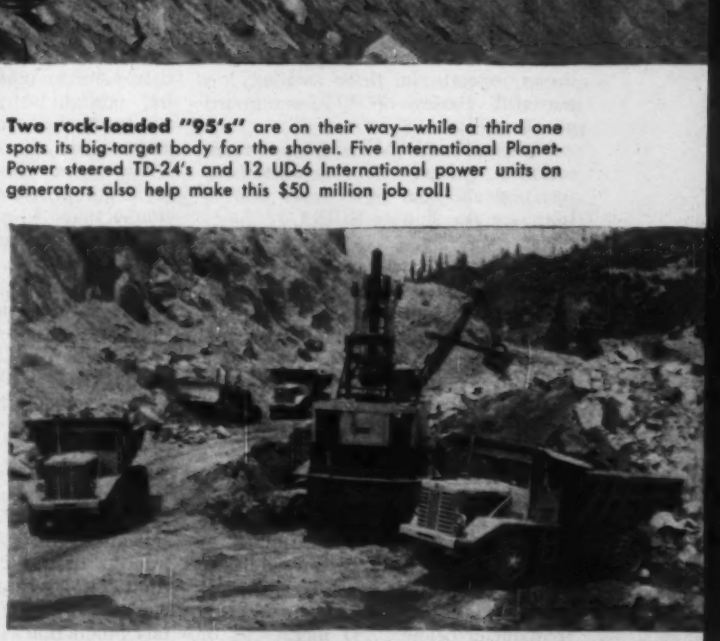




"95" Payhaulers are "horsing" their 24-ton rock loads up grades as steep as 18%—on the Mammoth Pool Project! The "95's" Turbo-charged diesel engine develops 335 hp—the 18-ton "65's" is 250 hp!

Here's part of the 10-unit "95" Payhauler fleet parked during noon-hour, that established the amazing 98.5% availability record on Southern California Edison's Mammoth Pool Project!

Two rock-loaded "95's" are on their way—while a third one spots its big-target body for the shovel. Five International Planet-Power steered TD-24's and 12 UD-6 International power units on generators also help make this $50 million job roll!



ing springs gain extra shock-swallowing support from extra leaves and extra length. Payhauler speeds match every load and road. And Payhauler exclusive integrally-forged full-floating planetary drive axles take full-torque loads without over-stress.

This extra built-in stamina helps International Payhaulers establish standout availability records. And so does ready availability of parts and service from your International Construction Equipment Distributor's well-stocked bin and well-manned shop—backed by factory warehouse parts reserves.

See how a Payhauler's bonus of Turbo-Charged diesel power assures you fuel-thrifty, big-load performance—even at high altitudes. Watch how power on Payhauler rear wheels helps deliver top operating efficiency on steep grades or mucky conditions—even where trailer-type units "spin their wheels." Prove that Torqmatic braking safely and positively controls the fully-loaded "95" downgrade—with little or no foot-brake help! See your International Construction Equipment Distributor for a demonstration!

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Contractors Raise Their Radio Voice

Associated General Contractors moved this week to help protect and improve private two-way radio communication facilities of its members.

AGC, and two other construction groups, are now board members of Special Industrial Radio Service Association (SIRSA). SIRSA is a five-year-old technical association. Its immediate goal is to coordinate use of the Special Industrial Radio Service. This is a high-power and protected radio facility, which the Federal Communications Commission makes available to a select group of businesses.

A new survey by AGC shows the importance of private radio communication to contractors. The 570 members responding operate 1,143 base stations and 7,966 mobile radio units.

Heaviest use among AGC members is in the Special Industrial Radio Service. Here, 410 firms have 935 base stations and 6,924 mobile units. These firms are the biggest operators; the contractors who need a widespread, long-range system of private, instant communications. The remaining base stations and mobile units, AGC's survey shows, operate in three smaller, less powerful classes of FCC-sanctioned private radio.

National Ready Mixed Concrete Association, National Sand & Gravel Association and four other trade associations are also joining SIRSA.

• **More potent spokesman**—Their aim is to make the technical association an effective spokesman before the FCC on private industrial radio matters. SIRSA, organized in 1953, was not a strong voice until recently. However, a 1957 proposal by the FCC provided impetus for reorganizing and revitalizing the association.

Then the FCC sought to replace Special Industrial Radio Service with a business radio service open to virtually all business. This plan threatened to overcrowd the airwaves. In addition, contractors would have been barred from broadcasting on the choice radio frequencies below 27.31 megacycles or transmitting with more than 180 watts of power. The power-restriction would have placed a severe limit on the range of radio communications of contractors and their suppliers.

• **FCC gives ground**—AGC, and several other groups, protested. And this year the FCC dropped its original plan and retained the Special Industrial Radio Service. It also:

• Defined, for the first time, those eligible for the special service. Included are heavy contractors on highway, bridge, sewer, pipeline, and airfield construction. This will take premium radio licenses away from such service users as plumbers, electricians, and refrigeration service agencies and force them into lower-quality radio assignments.

• Decided that Special Industrial Radio Service users may now be licensed in large cities. Large-city licenses were formerly prohibited.

• Allowed Special Industrial Radio Service users to continue using up to 500 watts of transmitting power.

SIRSA's executive secretary, Carroll White, is now organizing a Washington, D. C., headquarters to serve the 7,000 license holders in the Special Industrial Radio Service. New license applications number about 200 a month.

• **Some trouble spots**—"We're in trouble in many parts of the country," Mr. White says. "In Texas and California, for example, things are rough because of big demands for the band below 50 megacycles."

Under FCC-granted power, SIRSA established seven geographic regions in the U. S., each with its own volunteer, unpaid coordinator. He allocates broadcast frequencies to applicants approved by the FCC.

Most licensees ask for a specific frequency, based on advice from the supplier of their electronic gear. If it doesn't conflict with another service user, the request is approved.

The AGC and other groups pay only nominal dues, about $250, to SIRSA. Most of its money comes from individual licensees. Each pays for the number of radio units each operates. Largest users pay up to $1,000 per year.

Local Boosters Aid Contracting

Luring industry from one community to another is big business today. More than 1,800 communities are competing for new industrial and commercial construction through development organizations.

Channeled through these incorporated groups, development and expansion activity is generally concentrated in non-industrialized regions. And industrialized areas of persistent unemployment are stepping up their efforts. About 70% of development organizations are in towns of less than 10,000 population; over 20% in towns between 10,000 and 50,000 and only about 5% in population areas of more than 50,000.

• **How it started**—Several factors contributed to the post-war boom of come-to-our-town campaigns. The major consideration right after World War II was the desperate need for job opportunities for returning veterans and for workers displaced by cutbacks in military production.

But now community leaders realize that to maintain and expand the economic health of their areas, it is necessary to establish permanent organizations. The agencies generally are provided with sufficient working capital and power to put feasible plans and policies into immediate operation. Organizations so equipped are prepared to offer industrial sites and plant facilities for lease or sale. They are also in a position to extend financial assistance to new incoming industries, and to those already in the community.

• **The leaders**—Five states have more than 100 locally financed organizations competing for industrial favor, according to the U. S. Department of Commerce. Wisconsin tops the list with 168, followed by Missouri with 149, Georgia with 123, Arkansas with 118, and Minnesota with 109.

• **A big one**—Pennsylvania's two-year-old Industrial Development Authority has made 68 long-term loans for critically undeveloped areas. They total $7.9 million. In addition, 11,761 new factory jobs worth $37.1 million are credited to the agency.

The Pennsylvania IDA makes second mortgage loans to community nonprofit industrial development corporations. These are used for industrial plant construction in labor surplus areas. The loans supply a steady return, with interest, into an $8 million fund established by the state.

Authority loans to local development agencies may be for as much as 30% of the cost of the land, buildings and improvements in an approved industrial project in a labor surplus area. Community organizations must provide at least 20% of the total project cost. The rest of the needed funds are obtained from lending institutions by the community group.

Contract Awards Down 4% in October

But the volume for 10 months still tops last year; public works gains are responsible for climb

Heavy construction contract awards in October (five contract weeks) totaled $1.6 million. This is 4% below September on the basis of average weekly volume.

October volume is also about 5% below a year ago and less than half the October 1956 record. But because of big year-to-year gains in public works, heavy construction contracts for the first 10 months are 6% above the same period last year.

• **Private work improves**—Although volume for the month dipped, contract award figures were encouraging. Private and federal contracts showed improvement, recovering from their low September volumes. However, a seasonal drop in state and local awards offset the small gains in private and federal work. But state and local works continue to break records. Contracts in this sector during October are 17% better than they were last year and establish a new high for the month.

Earthwork-dams-waterways was the only public works category to increase between September and October. Volume was nearly double the relatively low September total.

But other categories did score substantial gains over a year ago; highways up 68%; bridges up 21%; sewerage up 16%; and public unclassified up 36%. The last category is mainly military airbase and missile base construction.

• **Firmer but lower**—Private and federal work firmed in October but awards are far below the high rates set at midyear. Moreover, the improvement in the monthly figures came in the early part of the month. Toward the end of October, awards slipped back to the slow pace of September.

Industrial building gets the credit for the improvement in private construction in October. This improvement, however, is basically a reflection of the low weekly average of $21 million—the lowest since January 1954. Even the October weekly average rate of $33 million is relatively low, being slightly under the poor $35 million weekly average during the first 10 months.

• **Upsurge missing**—Mass housing and commercial building showed modest gains in October. But so far housing fails to exhibit its traditional fall upsurge. Awards in September averaged $56 million a week. In October they averaged $57 million a week. This compares with weekly averages ranging from $78 million to $134 million during the March through August period. The decline could be a reflection of the tightened capital markets.

Huge U. S. Treasury financing needs may continue to keep the money market on edge. Heavy pressure is on the money market despite the sharp drop of corporate security sales during the last two months. The looming $12 billion Treasury refunding, due in December, and the demands of state and municipal borrowers are dampening enthusiasm for home mortgages.

• **Commercial holds promise**—Commercial building contracts moved up from the low September figure. But volume in October was well below every month during the February-August period. This picture will change, however, when the huge number of offices, stores and private institutional building proposed in the last 18 months passes through the planning stage into construction contracts.

Five of the six ENR regions are running ahead of last year's 10 month total. Gains range from 7% in New England to 16% in the South. By contrast, awards in the Middle West are off 13% mainly because of the continuing slump in industrial contracts. The Middle West did succeed in narrowing the 1957-58 gap, which was 16% in August.

The Far West increases its margin of gain over 1957 to 8%. This compares with a 6% gain at the end of September and a 13% deficit at the end of June.

The other four regions—New England, Middle Atlantic, South and West of the Mississippi—lost a small part of their gains in October. But they are still ahead of last year's same period.

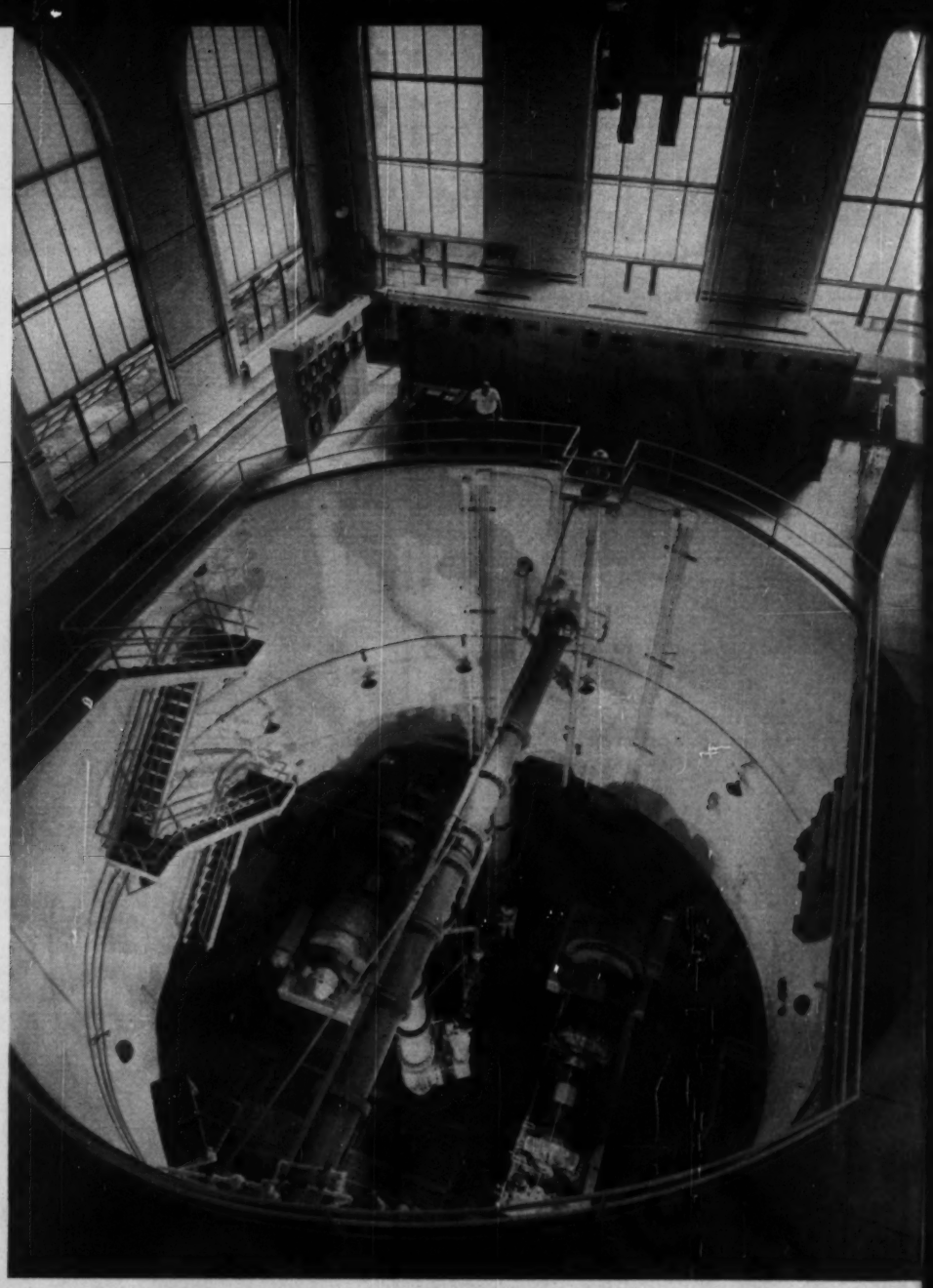
(*B&F continued on page 136*)

Engineering Construction Contracts for October

Five Weeks—Thousands of Dollars (000 Omitted)

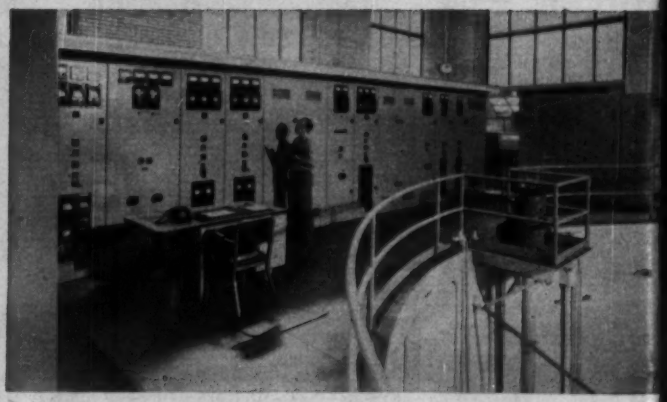
	October, 1958							% Change Oct. '57 to '58	U. S. Cumulative			
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.		Ten Months 1958	Ten Months 1957	% Change '57 to '58	Canada October 1958
Public Works, Total	**57,160**	**215,003**	**227,470**	**141,040**	**217,436**	**150,090**	**1,008,199**	**+21**	**9,963,369**	**8,376,156**	**+19**	**74,364**
Waterworks	1,069	3,322	3,417	5,080	5,503	2,652	21,043	−57	267,310	310,947	−14	1,019
Sewerage	1,502	15,934	6,762	10,653	11,193	9,112	55,156	+16	521,777	472,331	+10	9,112
Bridges	2,381	5,939	23,235	15,504	23,600	4,530	75,189	+21	609,038	606,809	+ 4	3,568
Earthwork, waterways	307	57,784	8,222	2,772	21,269	18,640	108,994	+161	932,975	894,733	+ 4	3,019
Streets and roads	26,971	59,813	89,618	69,291	97,012	56,080	398,785	+68	3,131,379	2,590,552	+21	12,280
Buildings: Residential	6,629	15,928	1,015	933	9,017	331	33,853	−53	989,799	590,626	+68	10,462
Other	15,948	40,230	85,707	25,070	31,964	37,960	236,879	−11	2,278,245	1,984,172	+15	18,017
Unclassified	2,353	16,053	9,494	11,737	17,878	20,785	78,300	+36	1,232,846	925,786	+33	16,887
State and Municipal	54,432	199,707	143,510	129,443	185,262	110,823	823,177	+17	7,395,369	6,350,299	+16	45,955
Federal	2,728	15,296	83,960	11,597	32,174	39,267	185,022	+42	2,568,000	2,025,857	+27	28,409
Private, Total	**45,309**	**198,228**	**60,165**	**140,657**	**104,832**	**63,882**	**613,073**	**−29**	**6,737,617**	**7,410,889**	**− 9**	**76,112**
Bridges	.....	.....	.....	1,000	.....	.....	1,000	−82	9,996	8,676	+15	.....
Buildings: Industrial	6,596	25,319	21,876	48,033	44,574	19,472	165,870	−38	1,536,516	2,792,159	−45	23,667
Mass housing	24,588	121,510	19,765	49,741	39,390	28,947	283,941	−14	3,246,565	2,638,985	+23	11,108
Commercial	12,314	46,982	10,685	39,105	13,888	14,877	137,851	−15	1,582,226	1,500,733	+ 5	39,322
Unclassified	1,811	4,417	7,839	2,778	6,980	586	24,411	−76	362,314	470,336	−23	2,015
Total Oct., 1958—5 weeks	**102,469**	**413,231**	**287,635**	**281,697**	**322,268**	**213,972**	**1,621,272**	**− 5**	.....	.....	....	**150,476**
Sept., 1958—4 weeks	87,871	278,320	247,489	273,929	257,834	202,678	1,348,121	....	.....	.....	....	111,761
Oct., 1957—5 weeks	104,045	451,299	271,207	293,498	401,797	178,026	1,699,872	....	.....	.....	....	96,881
Ten Months—1958	**1,121,096**	**4,235,947**	**2,302,371**	**3,048,371**	**3,328,411**	**2,664,790**	.....	.....	**16,700,986**	.....	**+ 6**	**1,390,273**
Ten Months—1957	1,045,874	3,795,936	1,981,427	3,515,941	2,985,934	2,461,933	.....	.....	.....	15,787,045	....	1,321,459
% Change '57 to '58	+7	+12	+16	−13	+11	+8	.....	.....	.....	.....	....	+5

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $244,000.



View at Nadine Pumping Station shows south pump pit containing pumps No. 2 and No. 3 with Westinghouse metal-clad switchgear and control center for all station pump motors in background.

Close-up view in booster station shows two 40-hp Westinghouse motor-driven booster pumps, Westinghouse safety switches, motor starters and power factor correction capacitor.



Metal-clad switchgear includes: incoming line section; starting breakers for 1000- and 1250-hp synchronous motors and their auxiliary field control cubicles; starting and running breakers and reactors for two 2500-hp motors.

Water pumping station saves $66,500 annually by Powering-Up electrically

The need for extensive modernization and expansion of water pumping facilities at Nadine Pumping Station of The Wilkinsburg-Penn Joint Water Authority brought about a complete change from steam to electric motor-driven pumps. One new 6.5-mgd pump was added to the three already in use to increase total capacity to 52,000,000 gallons per day.

In addition to the benefits of increased capacity and complete station electrification, comparative figures show a reduction in annual operating costs from approximately $268,000 to $201,500, for a savings of $66,500 per year. This represents an annual return of about 19% on the modernization cost of approximately $350,000. This fast five-year amortization of the investment eliminated the necessity of bond issues or other financing.

Besides the four new pump motors supplied by Westinghouse, the station now contains a line-up of 5-kv metal-clad switchgear, a 150-kva dry-type power center transformer, a motor control center for auxiliary power and a station battery and automatic battery charger.

The electrical Powering-Up of this pumping station has also made possible a more flexible discharge piping arrangement and the electric operation of valves and other equipment.

Powering-Up electrically can mean similar important benefits and savings for you. For further information, call the Westinghouse electrical construction engineer nearest you. He can help you in your Power-Up program. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa.

Owner: The Wilkinsburg-Penn Joint Water Authority
Consulting Engineers: Morris Knowles, Incorporated
General Contractors: Dravo Corporation
Electrical Contractor: Morganstern Electric Co., Incorporated

J-94088

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Over 250 Pages Westinghouse Data In Sweet's Construction File.

Shown at left is metal-clad switchgear feeder cubicle and 150-kva dry-type transformer. Motor control center at right contains motor starters and feeder breakers for various station auxiliaries.

Engineering group shown includes: George A. Maibach, Chief Engineer, Nadine Pumping Station; G. V. Gustafson, Morris Knowles, Inc., Consulting Engineers; M. B. Trimble, Westinghouse Construction Sales Engineer.

Record Backlog Signals More Business

The backlog of construction in the planning stage is growing again. The upturn started in September and continued in October.

ENR's Heavy Construction Backlog now totals $113.3 billion—a new record. It is $700 million above the total of September 30 and $300 million above the previous record high last March. It tops the total that was reached a year ago by $3 billion.

In October proposed work totaled $1.8 billion—5% above October 1957, and just under the October high in 1956. There was a sharp rise in state and municipal proposed work and a large increase in industrial building.

The rise is due primarily to an increasing volume of proposed work entering the planning stage. This means:

• More customers are getting ready to enter the heavy construction market.

• Heavy construction's potential for future contracts is growing again.

Reversal of a gradual five-month decline in total backlog will add starch to the current softening demand for heavy construction.

The October trend in proposed work is particularly encouraging because of the strong increases in both private and state and municipal work. Private contracts in the first 10 months trail last year by 9% and trail 1956 by 41%. The upturn in proposed private work is what's needed to end the contract award slump.

The upturn in state and local proposed work brightens the longer-range prospects. It had been tapering off in the last year or so, pointing to a possible slow-down in state and local work after 1959.

Building and Construction Costs Dip in November

Construction and building costs are a shade lower this month.

ENR's Construction Cost Index of 774.12 is down 0.2% from October's record high. But it's still 5% above one year ago. The Building Cost Index value of 534.96 is 0.3% below October. It is 3.5% above last year. Both indexes are based on 1913=100.

Falling lumber prices reversed the rising cost trends despite slight wage increases. All lumber prices are substantially lower than they were last month, with Douglas fir leading the decline. Average Douglas fir 2 x 4s are down 3.1% from October to $115.99 Mbf. There are some indications the downtrend may level off. Southern pine prices are more stable, only 0.8% below October.

Prices of other materials may remain stable for the next few months. Many materials are lower now than a month ago. Only clay sewer pipe is higher this month. Concrete sewer pipe, structural clay tile, brick and mineral wool insulation prices are off 0.2% to 2.1%. Clay sewer pipe is up 1.3%.

Scattered increases push the 20-cities wage averages up slightly this month. New Orleans construction trades received a 5 cent hourly boost November 1. Structural ironworkers in Baltimore are getting 15 cents more an hour.

ENR's average for common labor now is up 6.2% over last year. The average wage of bricklayers, carpenters and ironworkers is up 4.2%.

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Morlife® whole-ring, powdered-metal-base, clutch plate facing provides smooth, powerful, non-scoring friction contact for heavy-duty operation.

Morlife® button-type, ceramic-and-metal clutch plate facing provides powerful torque grip for use in off-highway, heavy-duty machines.

Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

How You Can Get the RIGHT FACING For Your Clutches

ROCKFORD CLUTCHES are made with a wide variety of friction plates—to meet your specific needs, exactly. Powdered-metal, ceramic-and-metal, metalic and organic facings provide the *right* torque, wear and heat-disbursal characteristics for every type clutch. Because ROCKFORD engineers have this wide range of facings available, they can help you select just the right friction material to suit your need.

Solid-ring or segmented, metal clutch plate facings provide for use in machines where metal-to-metal friction contact is indicated.

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Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

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CLUTCHES

Wage Increases Remain Strong

Recent settlements keep pay boosts only slightly below last year's and provide better fringe benefits

A new two-year contract won by Houston millwrights and piledrivers indicates that contractors haven't been able to do much this year about holding down labor's demands. Terms of the Houston agreement call for an 18½ cent hourly wage increase now and another 18 cents next year.

Although collective bargaining for 1958 got off to a hopeful start, wage freeze and recession talk have, at best, had only a slight effect on construction labor costs. Wage increases of 15 cents or more an hour, contracts longer than a year in duration and new and improved fringe benefits appear to be common denominators in recent contract settlements.

The Bureau of National Affairs reports that the average wage increase won by construction workers during the third quarter of this year was 13.9 cents an hour. That's only 2.2 cents lower than the corresponding figure for last year. About 28% of the settlements are for 15 cents or more—the most popular figure in all third-quarter negotiations. The next most popular figure is 10 cents an hour. The BNA figures are based on July, August and September contract settlements cited in BNA's "Construction Labor Report."

• **The trend**—The general pattern emerged earlier this year.

The U. S. Departments of Labor and Commerce put the second quarter construction wage increase at 2.8%. This is only a fraction of 1% less than the 1957 increase. But it's greater than the second quarter gain in any other year since 1948, except for 1957.

The figure pushed the over-all gain since July 1, 1957 to 14 cents an hour. The gain ranged from 10.5 cents for painters and plasterers to 17.4 cents for electrical workers.

The average 1958 construction wage gain had reached 14.1 cents an hour by July 1, according to BNA.

Early in September, the Associated General Contractors of America reported the results of its own survey. It said 1958 increases have so far averaged 14 cents an hour, as compared to 16 cents the previous year. This put 1958 collective bargaining results "only slightly below" last year's peak, which reached a five-year high.

• **The background**—This rather mild setback in a generally strong upward trend has occurred in the face of serious labor and management concern over the adverse effects higher wages might have on the health of the construction industry.

Richard Gray, President of the AFL-CIO Building and Construction Trades Department, late last year advocated a voluntary wage freeze for 1958 in order to avoid "more tight money, more inflation, less construction and more unemployment." But the AFL-CIO quickly squelched the idea with a plug for higher wages to increase consumer purchasing power and sustain an expanding economy. So, Mr. Gray's suggestion never took hold despite the notable efforts of such contractor groups as those in Cleveland and New Jersey.

The recession deepened after that and unemployment climbed to disturbing proportions. At the latest count, 7.2% of the labor force was out of work. This figure includes 9.6% of the nation's construction workers.

One of the reasons why these factors haven't seriously dampened labor's drive for higher wages is the existence of long-term labor contracts that provide for automatic, deferred wage increases. Construction contracts negotiated last year, for example, provided for an average deferred wage increase of 15 cents an hour effective in 1958. Few people are willing to settle for less than the next fellow is getting—and this was one of the first holes punched in Mr. Gray's wage-free proposal. Another factor, of course, is the relative prosperity the construction industry has enjoyed.

• **Some comparison**—Deferred wage increases are apt to be a continuing problem in any efforts to get labor to lower its sights next year.

BNA says that about half of the 1958 third-quarter agreements will run for longer than a year. The same thing happened in settlements concluded in the first six months of 1958. This means that 1959 wage increases have already been determined in a quantity large enough to influence next year's bargaining.

Present indications are that the size of deferred increases negotiated this year is generally not far behind the immediately effective 1958 increase. In the new Houston contracts for carpenters, millwrights and piledrivers, for instance, the 1959 wage increase will be 18 cents an hour; a September settlement with Miami painters gives a 1959 increase of 25 cents on top of a 1958 increase of 25 cents and a recent Philadelphia contract gives boilermakers a present increase of 15 cents and a deferred pay boost of the same amount for next year.

The current construction wage picture in terms of "averages," however, is a little misleading. The amounts won by unions have varied both by trades and by geographical location.

Unions in the western states have scored the highest gain in the last three months—an average of 17.6 cents an hour. Wage gains in the Northeast have averaged 14.4 cents, in the Southeast 13.4 cents and in the Midwest and Rocky Mountain areas 13.2 cents, according to BNA.

• **Fringe benefits**—This upward surge of basic rates has been accompanied by a growing interest in fringe benefits. Health and welfare plans, pension plans, paid vacations, apprenticeship funds, holiday pay and industry promotion programs received some attention in third-quarter bargaining. And BNA says their relative popularity shaped up in that order.

Some indication of what's happening on the fringe front is apparent in the BNA report. It says that contract settlements in the third quarter set up eight new health and welfare plans, increased employer health and welfare contributions in 15 cases, established 12 new pension plans, upped employer contributions for six existing pension plans, provided for vacation pay for the first time in 10 instances and gave holiday pay in two cases where none existed before.

This development is in line with the trend that is making fringe benefits a significant element in labor costs.

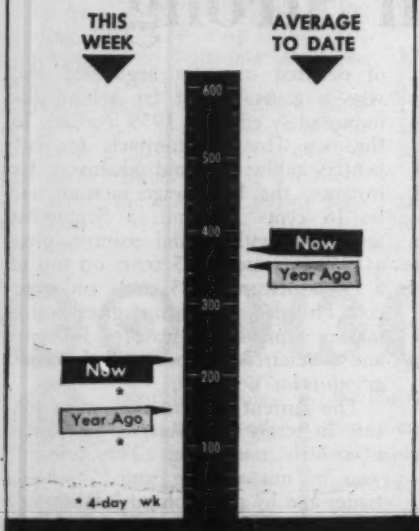
A National Chamber of Commerce study of a variety of industries reports that fringe benefits averaged $981 per full-time employee last year. That represents 21.8% a payroll or 48.4 cents per payroll hour. In terms of cost per employee, fringe benefits were up $162 over the 1955 level.

(*Labor continued on page 139*)

Construction Scoreboard

ACTIVITY THIS WEEK

Contract Awards
Millions of Dollars

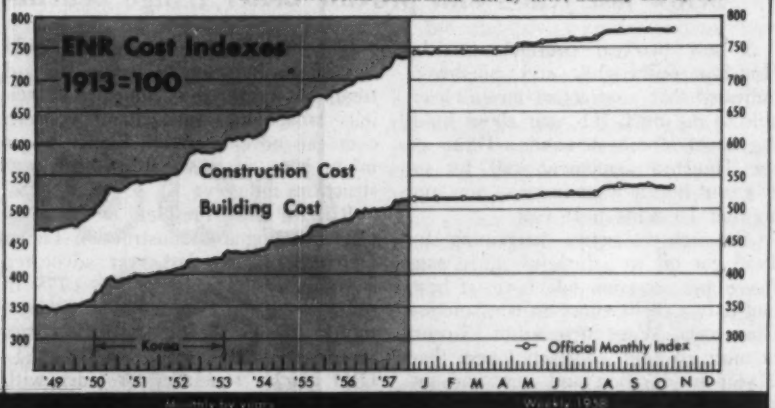


COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 30 1958	% Change from Oct. 2 1958	% Change from Oct. 31 1957
Construction Cost	774.12*	−0.17	+4.98
Building Cost	534.96*	−0.29	+3.51

* Official Monthly Index for November 1958.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 45 wks 1958	Cum. 45 wks Chge '57-'58
	millions		%
All Heavy Constr.	$221.5†	$16,922.5	+6
Private	74.0	6,811.6	−9
Public	147.5	10,110.9	+20
State & Municipal	125.4	7,520.8	+17
Federal	22.1	2,590.1	+27
By Type of Work			
Public			
Waterworks	2.6	269.9	−14
Sewerage	6.4	528.3	+10
Bridges*	16.0	634.9	+2
Highways	69.7	3,200.9	+23
Earthwork, Waterways	5.0	938.2	+4
Buildings, Excl. Housing	28.9	2,307.5	+15
Housing	3.3	992.9	+66
Unclassified	15.6	1,248.4	+38
Private			
Mass Housing	33.2	3,279.6	+23
Commercial	24.6	1,606.7	+6
Industrial	13.9	1,550.8	−45
Unclassified	2.3	364.4	−23

*Includes private bridges † 4-day week

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Oct. 30	Cum. 44 wks 1958	Cum. 44 wks Chge '57-'58
	millions		%
Corporate Securities	$61.8	$4,441.5	−14
State and Municipal:			
All Except Housing	90.9	5,364.5	+12
Housing	...	114.5	−27
Federal Loans	1.9	169.3	−6
Federal Aid	...	2,596.2	+20
Total Nonfederal	$154.6	$12,686.0	+2
Federal Appropriations:			
Projects in U. S.	...	$3,946.1	+42
Outside U. S.	...	35.2	+21
Total New Capital	$154.6	$16,667.3	+9

WAGE RATES, 20-cities average

	Nov. 1958	% Change from Oct. 1958	% Change from Nov. 1975
Common	$2.480	+0.1	+6.2
Skilled (average 3 trades)	3.756	+0.1	+4.2
Bricklayers	4.004	+0.1	+3.6
Structural Ironworkers	3.778	+0.3	+4.2
Carpenters	3.486	+0.1	+4.7
Equipment operators (average three types)	3.393	+0.1	+4.8

MATERIAL PRICES, 20-cities average

Structural Steel (average 3 mills), per cwt	5.50	0	+4.3
Lumber, 2x4 Fir, per M fbm	115.99	−2.1	+1.2
Lumber, 2x4 Pine, per M fbm	102.75	−0.8	+2.4
Cement, bulk, per bbl	3.954	0	+0.8
Sand, per ton	2.550	0	+2.5
Ready-mixed concrete, per cu yd	13.838	0	+1.0
Gypsum sheathing, ½"x2'x8', per Msf*	62.876	0	−0.4
Fiber board sheathing, ½" sq. ed., per Msf*	71.445	0	+0.2
Mineral wool insulation, 3' butts, per Msf*	70.461	−0.2	−0.8
Crushed stone, 1½", per ton, CL	2.849	0	+1.4
Concrete blocks, sand/gravel, 8"x8"x16", each*	.229	0	+1.8

	Oct. 1958	Sept. 1958	Oct. 1957
Brick, common per M	$37.443	−0.2	−0.7
Lime, hydrated finishing, per ton, CL	38.713	0	+5.8
Structural clay tile, 3x12x12", per M, 2,000 up*	185.020	−0.2	+1.5
Vitrified clay sewer pipe, std 12", per ft	1.335	+1.3	+1.8
Concrete sewer pipe, 12", per ft	1.314	−2.1	+6.7

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1957	1913=100	1949=100	1913=100	1949=100	1913=100	1949=100
Nov.	737.43	154.59	516.81	146.91	457	132
Dec.	738.08	154.73	516.27	146.76	357	103
1957 Average	**723.85**	**151.74**	**508.67**	**144.59**	**517**	**150**
1958						
Jan.	743.44	155.85	516.79	146.90	368	106
Feb.	743.77	155.92	515.78	146.62	446	129
Mar.	744.41	156.05	516.09	146.70	520	150
Apr.	745.78	156.34	516.61	146.85	585	169
May	751.57	157.56	518.62	147.42	674	195
Jun.	757.31	158.76	521.09	148.13	661	191
Jul.	762.52	159.85	524.29	149.03	705	204
Aug.	764.44	160.25	525.62	149.41	575	193
Sep.	773.47	162.15	535.02	152.09	541	156
Oct.	775.30	162.53	536.53	152.51	446	129
Nov.	774.12	162.28	534.96	152.07	...	...

Craft Unions Press Claims

AFL-CIO metal and building trades unions seek a showdown with industrial unions on jurisdiction

The smoldering feud between AFL-CIO craft and industrial unions flared up again last week. And it looks as if the federation is still far from solving the deep jurisdictional conflict that has plagued both building tradesmen and contractors.

The new outburst centers around an organizing clash between the powerful industrial unions and the Metal Trades Department, with the Building and Construction Trades Department backing its craft union allies.

Principal question is whether craft unions can band together and conduct organizational activities as a unit, as the metal trades have done. To the building trades, the fundamental question is whether the AFL-CIO constitution protects the organizing rights and jurisdiction of craft unions.

The issue was aired last week before a special committee of the federation's Executive Council. The committee's report will go before the Executive Council this week. And with it, there are apt to be some bleak appraisals of the ill-fated machinery set up last February to settle job fights between craft and industrial unions over factory construction work.

• **Metal trades dispute**—Principal adversary of Walter Reuther's Industrial Union Department in this new phase of the jurisdictional conflict is the Metal Trades Department. It has 15 unions—10 of them from the Building Trades Department. While the two departments share union membership, the latest trouble is strictly a metal trades matter.

Essentially, it involves an organizing procedure used by the metal trades union before the merger as a counter to the CIO's industrial unions. Many times, in shipyards and plants, the metal trades unions organized, as a council, to challenge the plant-wide organizing of the industrial unions. This system of metal trades councils for organizing has been continuing in the merger period.

Several months ago, the United Steelworkers protested the council system of organizing and cited two cases in point: Ormet Corporation aluminum plants where the Metal Trades Council lost out to the steelworkers in Ohio and another case where the council won an election from the USW in Burnside, La.

The Industrial Union Department claims that the Metal Trades Department has no right to organize or to challenge an affiliated union of the AFL-CIO. It argues this violates the AFL-CIO constitution, which says the individual union is autonomous.

The Metal Trades Department cites its historical record of organizing before the merger where councils have negotiated industrial contracts. One system is to sign up all workers as members of the council and have the council pay dues to the craft unions represented.

Frequently, this method has avoided having a number of unions signing different contracts with one company. It has been a way of selling craft unions to employers via a plant-wide labor organization.

The IUD argument is that this method might have been valid during the split with the CIO, but the merger constitution now outlaws the system. This was the main subject of debate in the two days of conferences last week.

• **The building trades**—Both sides had heavy support. Joining Metal Trades Department president James Brownlow was Richard J. Gray, head of the Building Trades Department, and individual craft unions—including the plumbers and painters unions.

Backing the IUD were the United Steelworkers, the Auto Workers, the Oil Chemical and Atomic Workers and the Shipyard Workers.

Mr. Gray has, in the past, expressed the fear that IUD leaders, such as Walter Reuther and David McDonald, will use the fight to advance the proposition that no AFL-CIO department is protected in its organizing under the AFL-CIO constitution; that the traditional jurisdictional prerogatives of building tradesmen are fair game for the industrial unions.

The same argument was made by Mr. Brownlow at the recent general convention of the Sheet Metal Workers' International Association in Detroit. He issued this warning: "I don't advocate raiding at all, but I do say to you, as I would to every skilled group, that you must organize those coming under your own jurisdiction in the industrial field, or it will not be too long before the only work which you sheet metal workers will be doing, and the other skilled craftsmen, are in such buildings as this, and don't you forget it."

• **Jurisdiction**—Last week's closed session between the Metal Trades and Industrial Union Departments tried to avoid the general question of jurisdiction by limiting the meetings to the question of craft council organizing.

But the Meany-run Executive Council, at its quarterly meeting this week, is due to hear reports on the system of using on-the-spot trouble-shooters to settle the job fights between construction and industrial unions. That method provided for three two-man teams to investigate and attempt to settle the conflicts—or send them on to higher officials in the AFL-CIO.

The Building Trades Department claims the system is just not operating; that the Industrial Union Department still hasn't named its three representatives to man the teams. And, a department spokesman says, "over 100 cases" of jurisdictional conflicts are now before AFL-CIO president Meany.

Gist of the complaints is that industrial unions are invading the construction field and gobbling up the jurisdiction of the building trades unions, either with or without labor contract clauses restricting the right of industrial employers to farm out construction work.

Building trades leaders are impatient. They claim delay in solutions provides more time and jobs for the industrial unions that refuse to use the settlement machinery. When an industrial union insists on handling construction jobs that may belong to craft workers, they say, any delay is in their favor.

The IUD insists it is complying with the system although only one team is set up. The United Steelworkers have shown some resistance to the plan.

The whole affair, after months of confusion, is now being tossed back to Executive Council where it originated.

Teamster Court Case Reaches Hearing Stage

The fate of James R. Hoffa as president of the teamsters union is being argued this week before Federal District Court Judge F. Dickinson Letts in Washington, D. C.

The testimony heard at the present hearings will be used by Judge Letts to answer two questions now before him:

• Can Mr. Hoffa proceed with the union convention he has called for March 16-18 in Chicago?

• Should the board of monitors be eliminated or should it be continued?

These are the questions posed by a series of complex petitions filed in the court.

(*Labor continued on page 140*)

Faster Brick Work

Higher productivity in the homebuilding field is encouraged by union

The Bricklayers, Masons and Plasterers International union has adopted a constitutional amendment that may increase the productivity of bricklayers.

The amendment authorizes subordinate unions to test and use "any instruments" that will increase productivity in the homebuilding field. It was passed at the union's recent biennial convention after a number of local unions had expressed interest in various types of "speed-lead" devices in residential work.

This action "allows local option and encourages free exploration by subordinate unions to make constant improvements to the mason's trade," the union's Executive Board says.

The device that generated interest in the amendment is a slotted-pole arrangement that allows guide lines to be stretched along the sides of a wall. The line enables masons to lay bricks and other masonry units simultaneously at the middle and ends of the wall instead of waiting until the corners are built. Developers of the system claim it can produce wall-cost savings up to 25%.

Stone & Webster Settles With Design Personnel

Stone & Webster Engineering Corporation, Boston, has negotiated a new one-year labor contract with an affiliate of the American Federation of Technical Engineers, AFL-CIO.

The agreement, effective October 27, ended a 10-day strike by draftsmen and designers represented by the Association of Engineers, Architects and Draftsmen, Local 105.

It provides for a general wage increase and makes several technical changes in the seniority provisions of the one-year contract that expired June 29. The pay boost on an hourly basis averages 11 cents and ranges from 8 to 12 cents. On a weekly basis, the range is $3.20 to $4.80 for a 40-hour week.

As part of the settlement, the company agreed to reinstate all striking employees by November 5.

The contract covers nearly 600 Stone & Webster draftsmen and designers employed as production workers in the firm's design division. According to a union spokesman, however, many of them are registered professional engineers, including civils, electricals and mechanicals.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: November 13, 1958

Soil Explorations & Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time on November 13, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Soil Explorations and Foundation investigations at Various Sites on Cross Bronx Expressway, Major Deegan Expressway interchange Including Bridge Over Harlem River, F.A.I. Route 511, Project 1-1084 (28), Item 54, Bronx County, which Constitutes Contract Spec. No. FA-SM-132.

Maps, plans and specifications may be examined and obtained at the following offices.

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.
The Engineer's Estimate of cost for this work is $8,920.00.
Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".
The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: November 20, 1958

Contract M 58-16

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M., E.S.T. on November 20, 1958 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, New York for:

Contract M 58-16 for Repairs to Winton Rd. Bridge (E-143) over the Barge Canal in Monroe County, New York.
Engineer's Estimate for M 58-16 is $14,400.00.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, New York.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 58-16 may be examined and obtained at the office of Mr. B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York.

The deposit for Plans and Proposal Forms for Contract M 58-16 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.
Proposals for M 58-16 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $800.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and the Highway Law as set forth in "Instructions to Bidders" in the contract specifications. The right is reserved to reject any and all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5116) will be received at Glendive, Montana, until 10 a.m. Mountain Standard Time, December 4, 1958, for furnishing labor and materials for Stage 01 Additions to Dawson County Substation, Fort Peck Project, Montana. Location near Glendive, Montana. Principal items are excavation for addition to substation site—15,000 cu. yds.; Concrete—505 cu. yds.; Constructing addition to existing service building—lump sum; Furnishing and erecting steel structures—160,000 pounds; Furnishing and installing aluminum covers—5,000 pounds; and other work. Completion time 670 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 866, Glendive, Montana; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Paper Plant Project

Ministry of Development, Government of Iraq. The selling date of the Paper Plant Project specifications is extended until 25 November, 1958, at a cost of $140.00 nonrefundable. Interested parties contact the Embassy of the Republic of Iraq, 2135 Wyoming Avenue N.W., Washington, D. C.

Read the Official

Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: November 20, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 20th day of November 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany, N. Y.						
Albany	FASS 58-25	South Bethlehem-Feura Bush Co. Rds. 53, 54 and 102 Proj. S-483(1)	4.14	Asphalt Concrete	$25,000 Plans $5	$457,000
Greene (Rte. 385)	FARC 58-167	Catskill-Athens, S.H. 5367 Proj. F-385(8)	0.67	Asph. Conc. = 0.66 Mi. Misc. Work = 0.01 Mi. Comp. WF Beam Br., 125'	$21,000 Plans $5	386,000
Saratoga (Rte. 9)	FARC 58-166	Clifton Park-Round Lake, S.H. 1795 Proj. F-539(12)	2.31	Asph. Conc. = 1.95 Mi. Misc. Work = 0.36 Mi.	$30,000 Plans $5	557,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Madison (Rte. 12)	FARC 58-161	Hubbardsville-North Brookfield, S.H. 8203 North Brookfield-Waterville, Pt. 1, S.H. 1500 Proj. F-456(9)	3.83	Asphalt Concrete, Type 1A	$43,000 Plans $5	791,000
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington St., Syracuse, N. Y.						
Cayuga	FASS 58-21	South Butler-Conquest, Pt. 2, Co. Rd. No. 22 and 23 Proj. S-285(2)	3.32	Bit. Double Surf. Treat. Pavt.	$21,000 Plans $5	384,000
Cort. & Tompkins	FASS 58-22	McLean-Cortland Co. Rd. 105 & 120 Proj. S-539	2.24	Bit. Double Surf. Treat. Gravel	$14,000 Plans $5	257,000
Oswego	FASS 58-23	Phillips Corners-Mallory-Little France Co. Rd. 487 Proj. S-34(2)	4.79	Asphalt Concrete	$35,000 Plans $5	634,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	LOSP 58-4 FAC 58-25	Lake Ontario State Parkway (Dewey Ave.-Rochester City Line) Rochester City: Lake Ontario State Parkway Arterial Highway (Rochester City Line-Lake Ave.) Proj. U-1141(1)	1.68 (1.60 Acc.)	Grad., Drain. & Gravel Found. = 1.68 Mi. (Access Rds. = 0.92 Mi. Grav. Fdtn. and 0.68 Mi. Asp. Conc.) 2 RR Sepa. Plate Girders 342.1' and 162' 1 Hy Sep. Reinf. Conc. Rig. Frame 109.7' 1 Hy. Sep. Comp. WF Beam 164'	$150,000 Plans $5	2,702,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie (Rte. 78 and 324)	FARC 58-165	Transit Pt. 1, S.H. 88 Sheridan Drive, S. H. 9216 Proj. U-651(9)	1.56 (0.57 Acc.)	9" Cem. Conc. 2 at 24' = 1.02 Mi. (Acc. Pavt. = 0.57 Mi. Cem. Conc.) Asphalt Conc., Ty. 2A = 0.43 Mi. Misc. Work = 0.11 Mi. Hy. Sep. Comp. WF Beam, 162.5'	$70,000 Plans $5	1,243,000
Erie	FI NYST 58-1	New York State Thruway-Erie Sect., Sub. 8C, 8D and 8E Niagara Sect. Sub. 1 and Ontario Sect., Sub. 9, 10 and 11 Proj. I-1072(6); I-1071(12)	7.10	6' Chain Link Fence and Misc. Work	$10,000 Plans $5	170,000
Erie	FAC 58-22	City of Buffalo: Broadway Arterial Highway Proj. U-285(4)	0.44	Asphalt Conc., Type 2A = 0.38 Mi. Misc. Work = 0.06 Mi.	$17,000 Plans $5	312,000
Erie	FASS 58-24	Central Quaker Street, Co. Rd. 498 Proj. S-545(1)	0.86	Bit. Treat. Grav. = 0.85 Mi. Misc. Work = 0.01 Mi. Comp. WF Beam Bridge = 117.5'	$14,000 Plans $5	261,000
Niagara	FAC 58-24	City of Niagara Falls: Hyde Park Boulevard Arterial Highway (Michal Ct. to No. City Line) Proj. U-1128(1)	1.59	Asphalt Concrete = 1.52 Mi. Misc. Work = 0.07 Mi.	$115,000 Plans, Large Size Only, $50	2,087,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Dusee Street, Watertown, N. Y.						
St. Lawrence	FASS 58-20	Southville-Holmes Hill Co. Rd. Proj. S-530(1)	6.17	Bit. Surface Treated Gravel	$30,000 Plans $5	537,000
St. Lawrence (Rte. 37)	FATC 58-2	Village of Massena: Center St.-Parker St. Bridge and Interchange, FAS S.H. 57-5. Proj. U-S-467(2)	0.64	Furnishing & Installing Traffic Signals	$2,200 Plans $5	40,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess & Orange (Rtes 22 & 84)	RC 58-169	Amenia- Wassaic, S.H. 537, Br. No. B-2 Middletown-Montgomery, S.H. 499, Br. No. B-5	....	Cleaning and Painting 2 Bridges	$350 Plans $5	6,000
Orange & Rockland	PIP 58-2	Palisades Interstate Parkway (N.Y. and N.J. State Line to Bear Mt. Br. Circle)	26.13	Roadside Development	$12,000 Plans $5	211,000
Ulster & Sullivan (Rte. 32)	RC 58-164	Woodbourne-Ellenville, Pt. 2B, Pt. 2A and Pt. 1, S.H. 49-4, S.H. 49-6 and S.H. 49-7	10.94	Grad., Trimming Road Section and Misc. Roadside Improvement	$5,000 Plans $5	93,000
Westchester (Rte. 129)	RC 58-163	Croton-Croton Dam-Croton Bridge, Pt. 2, S.H. 1886	3.66	Beam Type Guide Railing	$1,100 Plans $5	20,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L.I., N. Y.						
Bronx	FI TNE58-2 FI CBE58-5	Interstate Route Connection 513 Cont. 2 (Cross Bronx Expressway and Throgs Neck Expressway) Proj. I-1112(7)	2.73	Grading and Drainage Bridge Substructure	$470,000 Plans $5	8,420,000
Nassau	MSP 58-1	Meadowbrook State Parkway	0.13	Miscellaneous Drainage Work	$3,000 Plans $5	57,000
Nassau	FAC 58-23 FARC 58-168	Glen Cove Arterial Cont. 1 (Cedar Swamp Rd. to L.I.R.R.) Massapequa-Glen Cove, S.H. 9017. Proj. U-UG-1103(3)	0.74 (0.25 Acc.)	9" Cem. Conc. Pavt. 2 at 28' wide = 0.68 Mi. Misc. Work = 0.06 Mi. (Access = 0.20 Mi. Cem. Conc. and 0.05 Mi. Asp. Conc.) 1 Hy. Sep. Comp. I-Beam 76.3' 1 RR Sep. Plate Girder, 146'	$94,000 Plans $5	1,699,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal. Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT OF PUBLIC WORKS

Bids: November 25, 1958

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
TRASH RACKS
FOR
LEWISTON POWER PLANT
AND
TUSCARORA POWER PLANT
SPECIFICATIONS NO. PA-N-23016
NIAGARA CONTRACT NO. NP 31

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. destination, of 26 trash racks for the Lewiston Power Plant and 48 trash racks for the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 10:30 A. M. Eastern Standard Time on the 25th day of November, 1958 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y., at which time and place proposals will be publicly opened and read aloud.

Bids will be received for welded structural steel trash racks. The work involves the fabrication of approximately 1,202 tons of metalwork. First delivery will be required beginning February 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of ten dollars ($10.00) per initial set of contract documents, and five dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the maximum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: November 25, 1958

Contract BP-120.012

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 11
DEMOLITION OF PIER NO. 37 &
DREDGING

Sealed proposals for the demolition of Pier 37 and Dredging at Atlantic Basin, at the Brooklyn Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:30 P.M. on Tuesday, November 25, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, November 6, 1958

Bids: November 10, 1958.

Federation of Malaya Cameron Highlands Scheme

Tenders are invited from manufacturers for the supply of equipment for a large hydro-electric scheme which is being carried out by contract by the Central Electricity Board of the Federation of Malaya.

Tender documents will be available from 10th November, 1958 for the following Contracts:—

(a) Supply and erection of Steel Pipes.
(b) Supply of Tunnel Gates, Spillway Gates and Bulkhead Gates.

Tender documents for the above Contracts may be obtained from:—

Messrs. Preece, Cardew & Rider,
8, 10 & 12, Queen Anne's Gate,
Westminster, London, S.W. 1.,

on payment of £5 for each contract. Cheques are to be drawn in favour of Messrs. Preece, Cardew & Rider and the amount will be refunded on receipt of a bona fide Tender.

Sealed Tenders must be delivered to Messrs. Preece, Cardew & Rider at the above address not later than 12.00 noon on Monday, 23rd March, 1959.

The Central Electricity Board do not bind themselves to accept the lowest or any Tender.

Applications for Tender documents for Contracts (c) to (f) below should NOT be made until a further advertisement appears in about six months' time:—

(c) Supply of Valves.
(d) Supply of Sluice Gates and Single-faced Sluices.
(e) Supply of Screens and Trash-raking Equipment.
(f) Supply of Structural Steelwork.

Bids: December 2, 1958

Contract NYA-970.005

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
HANGAR NO. 17
SUPERSTRUCTURE

Sealed proposals for the construction of the superstructure for Hangar No. 17 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 2, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, November 6, 1958

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2300 Chester Ave. Cleveland 1, Ohio

WANTED MECHANICAL ENGINEER

to head mechanical engineering department N.Y. Office contracting firm. Graduate engineer. Must have broad knowledge of mechanical, electrical and civil engineering design. Experienced working with and instructing engineers in design problems.

P-9231 Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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• POSITIONS VACANT

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Assist. Prof.—To teach undergrad. courses in structures and mechanics. Salary open. Civil Eng., Univ. of No. Dak., Grand Forks.

Structural Detailers for growing steel fabricator located in Northern, New York. Minimum of three years experience opportunity for ambitious men to grow with Company. P-9064, Engineering News-Record.

Civil Engineer—Recent graduate, structures option, needed by prestressed concrete firm. Write Prescon Corporation, Box 4186, Corpus Christi, Texas.

Civil Engineer—Age 25 to 40. Must be graduate engineer—Registered or capable of being such—Minimum three years construction experience. Work on small irrigation structures and earth dams. Send resume including picture and beginning salary requirement to: Chief of Water Development, Wyoming Natural Resource Board, 215 Supreme Court Building, Cheyenne, Wyoming.

Experienced Engineer to supervise subdivision construction and development, including pavement, drainage, water, and sewage facilities. Central Florida location with consulting engineering firm. P-9135, Engineering News-Record.

New Jersey State Department of Conservation and Economic Development has immediate vacancies for graduate civil engineers with two years experience in water supply, flood control, hydraulic or hydrographic engineering. Submit details and qualifications to Division of Water Policy and Supply, 520 East State St., Trenton 25, N. J.

Wanted: Young graduate Engineer, preferably single, interested in overseas assignment with Consulting firm. State education, background and experience. Reply fully to P-8394, Engineering News-Record.

(Continued on the following page)

DON'T FORGET
the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

• POSITIONS VACANT
(Continued from preceding page)

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Field Engineer—Heavy industrial construction and steel bridges. Aggressive and willing to travel in mid-west area. P-9181, Engineering News-Record.

Wanted Architectural Draftsman with 2 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8590, Engineering News-Record.

Wanted Registered Architect with 4 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8615, Engineering News-Record.

Civil Engineer. Four vacancies. For work in water and sewer design, water distribution, traffic engineering, or public works departments. Start recent CE graduate $425 in salary range to $512, plus further advancement. Start recently registered engineer $498 in range to $602, plus further advancement. Best benefits. Work under supervision of registered engineers. Write Personnel Department. City of Austin, Box 1160, Austin.

Supervisor for Shop and Yard wanted by Central Kentucky Contractor. Salary commensurate with experience. Reply in own handwriting giving qualifications and experience. Reply to P-9204, Engineering News-Record.

Estimator-General Superintendent for mid-western utility contractor. At least ten years experience with some engineering background. Send complete resume to P-9206, Engineering News-Record.

Plate Steel Estimator. Steel fabricator doing medium and heavy plate fabrication desires estimator familiar with take-off and pricing of plate work. Three to five years experience desired but promising applicants with less experience will be considered. Plant is located in Piedmont North Carolina. All inquiries will be held in strictest confidence. Salary open. P-9210, Engineering News-Record.

Electronic Computer Application Engineer Wanted. Midwestern consulting Engineering firm needs graduate engineer experienced in electronic computer application to engineering problems. Reply in detail to P-9211, Engineering News-Record.

Estimator wanted by General Building Contractor. Prefer graduate Civil or Architectural Engineer with at least 5 years of estimating experience on General Building Construction. Capable of completing estimates from preliminary plans. Excellent opportunity. Location—Central Pa. P-9220, Engineering News-Record.

Structural engineer. One who has successfully designed buildings for architects; who can work under pressure and get things done; who has reasonable imagination and ingenuity. Ability merely to solve equations will not suffice. Location: Large southern city. Send experience record and references. P-9226, Engineering News-Record.

Engineer for Structural Design work in Mpls. Perm. position, good opportunity. Salary $6600 to $7800 depending on experience. Write Bridge Engineer Soo Line Railroad, Mpls., 40, Minn. Box 1109.

Civil Engineer—experience and ability in design of sewers—sewerage treatment plant. State educational background, experience and salary desired. Write—Lewis E. Kohl, Inc., 16 State Street, Rochester, New York.

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• POSITIONS WANTED

Construction Executive; Substantial and successful record as a producer. Minimum $15,-000.00, general, or construction manager level. PW-9096, Engineering News-Record.

Supt. Const., 20 yrs institutional, industrial, Commercial. Engineer. Anywhere. PW-9138, Engineering News-Record.

Civil Engineer, five year C.E. Degree, three years experience in structural design and teaching. Also talented in human relations and administration. Desires foreign assignment, but will consider challenging U.S. position. PW-9138, Engineering News-Record.

Graduate engineer, professional license, N. J., 25 years experience construction & design, also prestressed concrete desires position with construction firm with possibility of associate or partnership status. PW-9175, Engineering News-Record.

Graduate civil engineer, P.E., 8 years experience in supervision of heavy construction and design desires to relocate west or southwest. PW-9185, Engineering News-Record.

Foreign Service experience. All aspects of negotiation, organization, labor training and direct supervision for roads, utilities, housing, general construction. Excellent record dealing with foreign philosophy under adverse conditions. Mature, adaptable, forceful. PW-9188, Engineering News-Record.

BSCE, MSCE, Structural Major, 32, 4 yrs. in hydraulic structures, 4 yrs. in heavy industrial structures. Competent to design or supervise structural design on concrete and steel structures. Familiar with theory of prestressed concrete. Desires challenging position here or overseas. Resident U.S.A. PW-9223, Engineering News-Record.

Office Manager, Sr. Cost Accountant or Payroll Manager, heavy construction, eighteen years experience. Best references, will travel, available at once. PW-9212, Engineering News-Record.

Construction Executive, age 38. Managed successful heavy construction company for 12 years. Estimating—Organizing—Completing. Experienced in complete management. Considerable experience negotiating with various authorities for extras, claims, etc. Cash flows prepared to anticipate financial requirements. Desire financial assistance to operate new entity or profit sharing arrangement with operating company. Have immediate profitable ventures to offer. Prefer Philadelphia area but will consider changing residence. PW-9221, Engineering News-Record.

• POSITIONS WANTED

Field Construction Engineer—41, German, 2 years designing and drafting, 9 years field reinforced concrete, river ports, irrigation, bridges in South America. Fluent Portuguese, Spanish, French and German, Foreign or Domestic. PW-9222, Engineering News-Record.

Structural-Architectural Designer, Drafts-man, Spec. Writer, Estimator. Age 29, B.S., family. 8 yrs. exp. all phases design thru constr., with considerable supervisory exp. versatile, productive, conscientious, personable. Desire permanent association with arch-engr., consultant, mfgr. or constructor firm. Will relocate. Resume upon request. PW-9224, Engineering News-Record.

Gen. Supt. or Contractor's Assistant. Sewers, heavy Earthwork, Mass Concrete. Capable productive administrator, adept in Labor & Public relations. References Tel. (evenings) Houston, Tex. JA-39769.

Laboratory or Engineering Firm Offered capable service of key employee; 20 years gen. const. experience. Member ACI and ASTM. Soils & Concrete field lab. mgr.; senior inspector large Earthwork, Concrete and Sewer projects. J. P. Wallace, 1117 Richmond, Apt. 4, Houston, Texas.

Project Manager—General Superintendent Paper mills—powerhouses; industrial, heavy commercial; organizer, administrator, producer. Good following—will travel; age 44; not an Engineer; practical builder with special management training—Min. salary $1,000 per month commensurate with responsibility. Resume on request. PW-9156, Engineering News-Record.

Purchasing Agent—Office Manager. Accounting background, 33. Good buyer. Experience with small construction company—schools, commercial, industrial buildings to $500,000. Southeastern Pennsylvania. Will relocate. PW-9162, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Equipment Manager with experience and ability to handle large foreign job. Available early 1959. PW-9173, Engineering News-Record.

Project Mgr.-Gen. Supt. 22 years experience heavy construction, bridges, highways etc. Recently completed multi-million project in Central America. PW-9170, Engineering News-Record.

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WANTED
ESTIMATING ENGINEER
Midwestern consulting engineering firm needs engineer with estimating experience for contractors and with consulting experience to organize and head estimating.

P-9092, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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Nationally known organization offers excellent opportunity for young civil engineer graduate. Engineering consulting and promotional work in highway and concrete fields. Location Ohio, Indiana and Kentucky area. Car allowance and expenses. Permanent position. Salary based on qualifications and experience.

P-9093, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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We are looking for a young, experienced, college graduate, with a degree in civil engineering, for a position in our El Paso, Texas Office. This opening is for a field engineer. It is an excellent opportunity for a young man to obtain a desirable position with a reliable firm doing all types of construction work.

ROBERT E. McKEE
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We have an exceptional opportunity to offer this man. We presently operate on a nationwide basis, but plan to expand our operations especially throughout the mid and far western states. We can offer a key position in this expansion program and an opportunity to grow with a growing company.

Write full details covering experience, education, references, personal data and salary requirements.

Director of Personnel
BLOUNT BROTHERS CONSTRUCTION COMPANY
P. O. Box 949, Montgomery, Alabama

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Prefer graduate Civil Engineer with at least 2 years experience as an estimator. Salary commensurate with ability. Excellent working conditions. Send resume to:

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P-9140, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-7577, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

ESTIMATOR

Midwest engineering and construction company seeks estimator thoroughly experienced in preparation of competitive bid estimates for industrial type projects. Will be responsible for complete estimate from basic take-off to final submission form. Prefer graduate Civil Engineer with a minimum of ten years applicable experience. Will consider non-graduate who has considerable experience. Liberal fringe benefits. All replies confidential.

P-9022, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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• *WANTED*

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1—Mod. 14S-100 Clyde Steam Whirley Crane	30,000.00
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2—56 Rex Stationary Concrete Mixers, electric	1,750.00 ea.
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2—Butler Cement Car Scoop Unloaders	600.00 ea.
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1—Heltzel Flexi-Plane X Frame Bridge Finishing Machine adjustable 23' to 30'	7,000.00
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ANDERSON EQUIPMENT COMPANY
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(3) Complete Ready-Mix Concrete Heating Plants as follows:
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All of the above are complete with automatic controls and hot water tanks equipped with Patterson Kelly coils. Any one of the above units will supply enough steam and hot water to produce 150 yards of heated concrete per hour.

(2) 150 ton—6 compartment Heltzel Batching Bins, 4 compartments for aggregates and 2 separate compartments for cement, together with 500 barrels cement silo, undertrack screw, cement elevator and separate scales.

(1) 100 ton—3 compartment Batching Bin with 2 yard weigh box

(2) Model DC-100-64 Tandem Axle Autocar Trucks with 6½ yard Smith Mixers.

(3) Model C-90-64 Tandem Axle Autocar Trucks with 5½ yard Smith Mixers.

(1) Model F8-Ford with 3½ yard Smith Mixer.

General Sand and Stone Corporation
705 Oakwood Ave., Hartford, Conn.
Telephone JAckson 7-9291

MODEL 4500
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No Way to Unity

IT'S TIME the National Society of Professional Engineers quit playing the role of the ingenue, and recognized the situation in which the engineering profession now finds itself. Earnestly seeking unity, so that one strong voice can speak for engineers on all matters of engineering concern, the profession long since established a federation of all its major societies, named it Engineers Joint Council, and invited NSPE to join. NSPE declines, and remains the only major engineering society not affiliated with EJC, despite the fact that many of its 40,000 members belong also to EJC-affiliated societies, whose memberships total near 250,000.

Now, the National Society of Professional Engineers—as if existing in a vacuum—comes forth at its fall meeting in San Francisco (ENR Oct. 30, p. 27) with an invitation to the major engineering societies of the nation to come join with it on a plan proposed by the American Institute of Electrical Engineers. The plan proposes NSPE take over all professional and economic matters and have the other societies confine their activities to technology. This plan is so clearly a move away from unity rather than toward it that none of the other societies supports it.

It's time the NSPE quit kidding itself by assuming an initiative it does not have. Its thoughtful members—especially those who belong also to EJC-affiliated societies—should do all they can to put an end to these irrational proposals. The place for NSPE to exercise the talents for good, which it unquestionably has, is from within Engineers Joint Council. For it to persist in being a separate, divisive force will only delay the day when there will be a single strong voice to speak for all engineers.

The Aswan Dam Offer

THE ANNOUNCEMENT that Russia has granted the United Arab Republic a credit of $100 million for the proposed Aswan High Dam is not surprising in view of President Nasser's stated determination to find means to undertake the $1.3 billion project. At present, however, the political aspects of the credit grant are clearer than is the manner in which the credit will be used.

By extending credit help, the Soviets not only tightened their grip on the UAR economy, but assured that the money would be spent in the U.S.S.R.; also that Russian engineers would have a hand in the construction of the dam. On President Nasser's part, the credit provides a means for at least a token start on the dam, which will tend to quiet local unrest over lack of progress.

From a construction standpoint, however, unless the Russians are going to build the entire project, the UAR's shortage of foreign exchange is going to dampen the interest of skilled contractors from other countries in the work. It will be recalled (ENR Feb. 9, 1956, p. 44) that the project contemplates a 55 million cu yd rockfill, 361 ft high and some 15,000 ft long, plus about 13 miles of diversion and power tunnels with a diameter in the neighborhood of 50 ft. Just to start on the construction of such a tremendous structure will require an upstream cofferdam 130 ft high and the driving of seven of the tunnels so that the river can be diverted. Even this initial job, which is estimated to take four years under the best of circumstances, would test the capabilities of the best dambuilders available.

So the Aswan High Dam is far from a going project yet, despite the $100 million Russian credit. President Nasser has indicated that earnings from the Suez Canal will eventually build the dam. Yet first call on these earnings would seem to be for improvements on the canal itself in order that it may continue to earn. And if the bulk of Suez earnings is ruled out, all that remains is Egyptian cotton. Building the Aswan Dam will take a lot of cotton.

The most that can be said about the Russian credit aid is that it is an interesting development with political overtones. It remains to be seen whether it heralds a real start on the Aswan High Dam or whether President Nasser will try to bring Western nations back into the scheme—provided he is still a free enough agent to consider such an alternative.

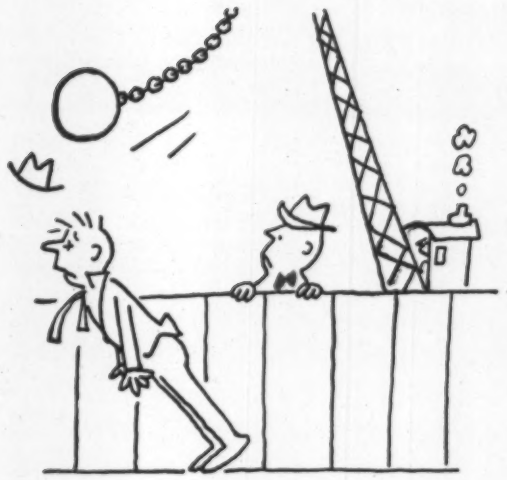
Are Review Boards Necessary?

MORE AND MORE COMMUNITIES are setting up review boards to pass on the architectural design of proposed construction—a trend which designers should take steps to reverse, not only in their own interest, but in the interest of the community as well.

The situation has developed because a minority of designers, working with little regard for how their projects fit into a community, merely create something that is different for its own sake. Alarmed by this, communities have countered with review boards. Unfortunately this mode of control gives no assurance that good taste will triumph. It may even merely preserve an aging status quo.

The review boards, in fact, are trying to do what the architect and engineer should do as a matter of course—practice good judgment. In most cases they are not equipped for this task. On the other hand, it is a part of the architect's job in developing a project to appraise growth, change and precedent in a community. And then, on the basis of this appraisal, to deliver what he and the owners feel, in good taste, to be the best design, considering use, space, environs, time and money.

If architects and engineers would assume entirely the responsibility that goes with the right to innovate, design control boards would be unnecessary.



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"You need our Workmen's Comp and Public Liability.
A Travelers safety expert gives your site the eagle eye—
Prescribes far safer methods in the spots where dangers lie.

3.

"And *if* you have an accident? In Travelers You Can Trust!
Your claim is settled quickly—oftentimes before the dust."
"But," Gary asked, "does Travelers follow through on blows like this?"
His staunch reply: "The headache's *ours* if something goes amiss."

4.

"Your costs go down and so do chances of your present plight."
"Ring up a sale!" cried Gary, "you have made me see the light!"
An ounce of sure prevention—that's The Travelers simple plan—
To get its golden benefits, just call your Travelers man.

NOTE: *Bonds, Equipment Floaters—Builders' Risk Insurance, too Are other ways The Travelers helps a contractor like you.*

THE TRAVELERS
Insurance Companies

HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds

Radical new concept in handling bearings speeds shipping

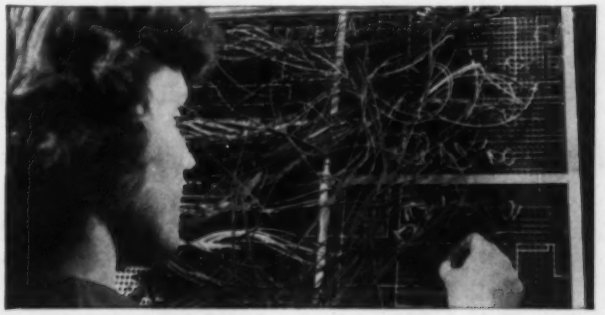
Helps you 6 ways when you buy Timken® bearings

To give you faster, better service when you buy Timken® tapered roller bearings, the Timken Company has developed a revolutionary new concept in warehousing, order processing and shipping. All the elements of the system converge at our huge new $3,000,000 Shipping Center in Bucyrus, Ohio, that enables us to get your bearings out faster and more dependably than ever before. It helps you in six important ways.

1. Reduces time required to process your bearing order. The new system, which uses the electronic computer, enables us to give you an acknowledgment and shipping date on most orders within 24 hours. **2. Cuts shipment and invoice preparation time.** Makes things easier for your purchasing department.

3. Your order comes completely from one shipping point. Single source handling further speeds your bearing shipment. **4. Your orders having the same shipping date are consolidated.** Increases handling efficiency at your plant when you receive your Timken bearings.

5. The new system helps assure delivery when promised, because it controls our production to meet your needs. **6. It gives you a practically** unlimited source of supply for tapered roller bearings, from our normal warehouse inventory of over 12 million bearing cones and cups.



And the IBM Computer (grid of which is shown above) is the system's heart. It integrates the Shipping Center with all our production facilities—controls the system which speeds order processing and keeps our production in line with your needs. This totally new concept in customer service is one more reason why you get your No. 1 bearing value when you buy Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

BETTER-ness rolls on

TIMKEN®

tapered roller bearings